UNIVERSITY OF PENNSYLVANIA

THE DISCOUNTING OF DIVIDENDS BY THE STOCK MARKET

BY

CLARENCE ARTHUR KULP

A THESIS

PRESENTED TO THE FACULTY OF THE GRADUATE SCHOOL IN PARTIAL FULFILMENT OF THE REQUIREMENTS FOR THE DEGREE OF DOCTOR OF PHILOSOPHY

PHILADELPHIA

1923

THE DISCOUNTING OF DIVIDENDS BY THE STOCK MARKETS

A THESIS

PRESENTED TO THE FACULTY OF THE GRADUATE SCHOOL IN
PARTIAL FULFILMENT OF THE REQUIREMENTS FOR
THE DEGREE OF DOCTOR OF PHILOSOPHY

BY

CLARENCE ARTHUR KULP

PHILADELPHIA

1923

Copyright, 1924

By

Clarence Authur Kulp

TABLE OF CONTENTS

I

PAGE

The Theory of Stock Market Discounting 5

II

The Discounting of Cash Dividends 11

III

The Discounting of "Rights" and Stock Dividends 49

IV

Resumé 58

APPENDICES

Appendix A. Stocks Announcing Cash Dividends 61

Appendix B. Cash Dividends. Original Items: Classified According to Degree of Discounting Effectiveness 65

Appendix C. Stocks Declaring "Rights" and Stock Dividends 92

Appendix D. "Rights" and Stock Dividends. Original Items: Classified According to Degree of Discounting Effectiveness 95

Bibliography 100

To
My Wife

CHAPTER I

THE THEORY OF STOCK MARKET DISCOUNTING

The General Meaning and Scope of Discounting

Those interested in organized stock exchanges and their functions claim for the stock market a very valuable function, that of discounting. By "discounting" is meant the faculty of predicting future events, general and specific. It is said, for example, that general business conditions are forecast by this market mechanism, much in the same way that a barometer forecasts future atmospheric changes. The trend of stock prices, while rising in response to the influence of business prosperity, rises in advance of the actual materialization of the prosperity itself. While stock prices are a result of the interaction of numerous price factors, such as the level of commodity prices, the current interest rate, and the position of business in general in the trade cycle, stock prices anticipate this interaction of forces which produces them. Before the price factors make themselves generally evident, they are estimated, and their effect on the prices of various kinds of stocks gaged.[1]

Discounting by the stock market is said to be made possible because those who make a business of trading in stocks are to a large degree specialists. It is impossible for one man or for one group of men to be informed exactly regarding all the

---

[1] "Although the trend of stock prices moves ahead of the trend in general conditions, it is nevertheless an effect and not a cause of the improvement or depression that it precedes. Stock exchange transactions are valuable solely as representing the general opinion as to the course of events and not as a factor with direct influence upon succeeding developments." David F. Jordan, "Business Forecasting," pp. 168–171.

"Thus prices in an organized market adjust themselves through the forces of supply and demand almost automatically and usually in advance, to changes in the basic values. . . . As a rule, owing to speculative factors, prices will rise before the rise in values occurs, or will decline before values actually diminish." J. Edward Meeker, "Work of the Stock Exchange," p. 386.

"When the event actually happens, it results in no great disturbance to values as was expected. Is it not better that this discounting of future possibilities should occur—that the effect of a given cause acting upon the market should be felt by graded steps instead of coming like a cataclysm?" Charles A. Conant, "Wall Street and the Country," pp. 95–96.

securities dealt in on a large exchange. Therefore, traders have devoted their efforts to particular classes of securities; some specialize in steel stocks, some in railroad stocks, some in industrials of various kinds. Since by far the greater part of the transactions on such a representative exchange as the New York Stock Exchange are speculative in character,[2] that is, are operations of professional traders, security prices represent largely the composite estimate of experts.[3] The continuous nature of the stock market, due to the presence of a sufficient number of buyers and sellers on each business day to insure constant quotations of prices on listed securities,[4] contributes to the success of the market in exercising the discounting function. The value of stock-market opinion, no matter how expert, would be decreased tremendously if expressed in price quotations only infrequently.

But not only is it said that the stock market furnishes expert opinion as to the value of securities, it is said to furnish this opinion in advance. These market opinions registered in the form of stock-price quotations are based not on conditions of the moment, that is, on current price factors; they are attempts to estimate and measure the effect on various kinds of securities of future conditions not yet generally and publicly known. Speculators are said to be a highly informed group of business men, possessing and utilizing information unknown or unnoticed by the general public. They are said to be acting usually

---

[2] "Each group (of speculators) pursues its own object and renders its particular service, yet the combined effect of their efforts is a huge increase in the volume of transactions on the market." S. S. Huebner, "The Stock Market," p. 22.

[3] "The market is not like a balloon plunging hither and thither in the wind. As a whole, it represents a serious, well-considered effort on the part of far-sighted and well-informed men to adjust prices to such values as exist or which are expected to exist in the not too remote future." S. A. Nelson, "The A, B, C, of Stock Speculation," p. 44.

"This prophetic quality of stock exchange prices is imparted to them by the invariably accurate group judgment of thousands of buyers and sellers throughout the nation, regarding future or prospective values." J. Edward Meeker, "The Work of the Stock Exchange," p. 386.

[4] "A continuous market may be defined as one where any security listed in that market may be bought and sold at any time during business hours at comparatively small variations from the current price." S. S. Huebner, "The Stock Market," p. 21.

ahead of current conditions—sometimes anticipating events as long as two years in advance.[5]

It is not intended to imply that the mere fact of specialization in speculation explains discounting completely. No matter how closely the speculator follows his particular stock or class of stocks, as an individual he is not infallible. Discounting, while depending *basically* on more or less precise information, is the expression of group judgment rather than of individual judgment. The controlling factor, naturally, is the element of information, since the average judgment of the uninformed would be of practically no value.

It is of importance to note that the events which the stock market claims to discount are of only two kinds. They are, first, those events which are general in character, as the general conditions of business, which are major price factors and are susceptible of prevision; second, specific events in the market itself, such as announcements by a corporation of its intention to pay a cash dividend, or to issue to its stockholders "rights" or privileges to purchase additional shares of stock. Certainly the market does not claim foreknowledge of every event, particularly those of minor importance and accidental in character.

For example, it is pointed out that the panic of November, 1907, was indicated by the stock market as early as October, 1906, when general stock prices began to drop rapidly, despite a bustling period of prosperity generally. When the panic itself occurred, the market not only was not caught unawares, but was already starting upward. The panic had been discounted and its effects had been liquidated in the stock market a year before. Again, the stock market began its recovery in November of 1907. General business conditions showed no improvement until a full year later. The most recent illustration of discounting cited is the action of the stock market after the war. As early as November, 1919, stock prices declined, in face of the tremendous boom of after-war prosperity throughout the whole country. Business in general did not begin to

[5] "Without an exception every business depression or boom in this country has been discounted by our security markets from six months to two years before the dull times or prosperity became a reality." S. S. Huebner, "The Stock Market," p. 36.

liquidate until the spring and summer of the next year. Apparently the stock market had expected that liquidation must come, and had registered that expectation. In August, 1921, stock-market prices reached their lowest point in the downward trend and began to rise. This rise took place during those months of 1921 in which there was almost complete stagnation in general business. Indeed, not until 1922 did business in general begin to show signs of even partial recovery.[6]

The stock market also is said to discount events having a very close connection with particular securities or groups of securities. The announcement by a corporation of its intention to issue to its stockholders "rights" or privileges is an illustration of a stock-market event which is discounted. The announcement of a corporation's intention to pay its regular dividend, or to reduce or entirely pass the payment of the dividend usually is not news in the true sense of the word, and has usually very little or no effect on the prices of the stock involved. The explanation is that the announcement is fully expected.

The Literature of Stock Market Discounting

References to the ability of the stock market to discount are very numerous in the literature of the market. Proofs of the operation of this important function, however, are confined almost exclusively to examples of discounting of general conditions. Careful researches of this nature are of value and constitute a real contribution to stock-market literature.[7] In regard to such particular events as the payment or non-payment of dividends, and the issuance of stockholder's rights, detailed studies are practically non-existent.[8] It is remarkable that the discounting of this latter type of event has had devoted to it

---

[6] See R. W. Babson's *Statistical Tables and Charts* (any issue in 1922).

[7] See Babsonchart of American Business Conditions, Babson's Statistical Organization. Any issue. Comparison of the lines on the chart representing average stock prices and general business conditions provides proof of discounting based on statistical data. Also the *Review of Economic Statistics*, Prel., Vol. III, No. 5, May, 1921, p. 93 *et. seq.* Committee on Economic Research, Harvard University, Cambridge, Mass.

[8] The study of E. G. Mears, referred to in the *Financial Policy of Corporations*, Vol. IV, p. 212, by Arthur S. Dewing, is an exception. This study deals with rights only. The results secured by Mr. Mears and those secured in this study are compared in Part III.

so little study. In the great majority of cases in which discounting, general or specific, is discussed, writers are content to support their claims with general or isolated illustrations.[9] Often statements are made and no exact proof of any kind is submitted.[10]

Scope of Present Study

It is the purpose of this study to test the validity of the claim that the stock market discounts. Since the subject of the discounting of general business conditions, as contrasted with the discounting of specific events, has received by far the most attention at the hands of students, the present study will be confined to an examination of the discounting of specific stock-market events. As a type of specific event closely connected with the stock market, the discounting of dividends will be investigated. Dividends are of two general kinds: (1) Cash payments. (2) Allotments of additional stock. This disbursement of additional stock may be either at a fixed price per share to the stockholder, usually below the market price of the stock already on the market, in which case the right to the disbursement is called a stockholder's right or privileged subscription; or it may be given the stockholder with no charge whatever, when it is called a stock dividend. A stock dividend is simply a privileged subscription given free of charge. Without entering into the details of the advantages and disadvantages to the shareholder of the issuance of rights and stock dividends, it is sufficient to say that the disbursement is valuable, if at all, because the shareholder expects either a continuation of the usual rate of dividend on the increased number of shares, or a total dividend (net rate of return) on all the shares, old and new, greater than the return on the old shares. It should be added that in the cases of certain stocks, issued by corporations having favorable possibilities of future expansion, the privilege to subscribe may be valuable primarily, as a chance for large *future*

[9] See David F. Jordan, "Business Forecasting," pp. 165–171. Also J. Edward Meeker, "Work of the Stock Exchange," pp. 386–388. Also Charles A. Conant, "Wall Street and the Country," pp. 95–96.

[10] See Charles A. Conant, *op. cit.* Also David F. Jordan, *op. cit.*

dividends. In such an event, the subscriber might be willing to accept an actual decrease in return in the present, and take chances on receiving his profits in the future.

The announcements of the payment or non-payment of cash dividends and the declaration of stockholder's rights are probably the most important events taking place in the stock market. Every business day in the year, scores of corporations all over the country decide to continue their usual dividend rate, to increase it, to reduce it, or to pass it entirely. It is not exaggeration to say that dividends—and the probabilities of their payment or non-payment—are the greatest single factor influencing the prices of stocks. The dividend is the market's chief test of earning power, of the income-returning ability of the corporation. It is of importance then to know whether the stock market discounts the announcement of dividends, because of the effect on the price movements of stocks. The continuous character of the market itself depends to a great extent on the degree with which the market registers price fluctuations evenly, steadily, without abrupt increases or decreases.

But one further question arises: Even though it is proved that the stock market discounts the announcement of an increase in dividend, for example, is it not more significant to know *when* such discounting takes place? To know that dividends are discounted in a certain percentage of the total number of cases is valuable, but such information is negative in character. Business man, investor and speculator wish to know not only *whether* or *not* discounting of specific events is a function of the stock market, but also *when*, approximately, at least, they can take advantage of this discounting. Therefore, the scope of the present study has been made fourfold:

1. Cash dividends (subject matter of Chapter II): (*a*) The *degree of discounting efficiency* of the stock market; or, put in the form of a question: *How frequently* does the stock market forecast the future? (*b*) The approximate *time of such discounting;* or, *How far in advance* does the stock market foretell the event?

2. *Rights and stock dividends* (subject matter of Chapter III): (*a*) The *degree of discounting efficiency.* (*b*) The approximate *time of such discounting.*

Chapter II

THE DISCOUNTING OF CASH DIVIDENDS

A. The Degree of Discounting Efficiency.

Introduction.—As has been indicated in the previous section, the announcement of the payment or non-payment of a dividend is probably the most important single event taking place in the stock market. There is a direct, constant and gradual effect of dividends upon the prices of stocks. From one ex-dividend date until the next, all other things being equal, the price of a stock should be increased daily by the amount of the dividend accrued. Stocks are sold inclusive of the accrued dividend, and one indication that speculators believe that the stock market discounts the payment or non-payment of a dividend is that stocks are sold "flat." This is exactly the opposite of the procedure in this country with bonds, which are sold "with interest," or in other words, with interest added from the last interest date.[1] The test to determine the discounting or non-discounting of a dividend announcement is whether there is any considerable reaction in the price of the stock upon the announcement of the dividend. (By the term "reaction" as here used, is meant any price movement indicating that the announcement is not completely expected. For example, a reaction in the case of an announcement of dividend increase would be a sharp rise in the price of the stock.) The day of the announcement of the dividend must not be confused with the ex-dividend date. The official announcement of the dividend by the corporation specifies the date on which the stock will sell ex-dividend, that is, exclusive of the dividend. The ex-dividend date is the day of record as of which stockholders whose names appear on the transfer books of the corporation are entitled to receive the dividend announced some

[1] The only exceptions to this rule occur in the case of income bonds and defaulted bonds.

time before. The purchaser of the stock on this day[2] will not receive the stock from the seller until the next day. He, therefore, will be too late to have his name entered on the books and has purchased the stock exclusive of the dividend accruing since the last ex-dividend date. Ordinarily the price of the stock will fall on this day by the amount of the dividend to be paid.

The function of discounting, being a prediction, since it operates months before the occurrence or non-occurrence of the event anticipated, has no relation to price changes on the ex-dividend date. It is certainty that on this date the price of the stock will fall by the amount of the dividend. The dividend has been declared. Everyone interested is in possession of the information. It is a far different matter on the other hand to attempt to estimate the probability that the dividend will be announced in the first place. If the market has diagnosed the situation correctly, if it has expected a dividend and the dividend has been forthcoming, there will be no considerable reaction, and we say that the dividend has been discounted.

The test which determines whether the stock market has discounted the dividend comes on the day of the announcement. If the news is fully anticipated it is logical to expect that the price of the stock will not react abruptly. The effect of the dividend has been exerted prior to this time. On the day[3] after the announcement also there should be no marked reaction. If there are marked reactions on the day of the announcement or on the day after, by just so much does the market fail of perfect discounting.

In order to determine the efficiency of the stock market as a forecaster of dividend announcements, it is not essential to analyze the price movements of stocks announcing dividends over a long period of time, for the essence of discounting is that the actual announcement of a dividend causes no surprise.[4]

---

[2] Regular way delivery, the most usual contract.

[3] Whenever the expression "day after the announcement" is used, reference is made to the first day after the announcement when the stock market is open for dealing. For example, if the day of the announcement is Saturday, the day after the announcement would be Monday.

[4] This statement has no reference to the problem of determining the *time* of discounting, discussed later.

The most important task in testing the validity of the theory that the stock market discounts dividends is to ascertain *what happened to the price of the stock on the day of the announcement.* But the full effect of an announcement might not evidence itself until the day after the announcement, due either to the publication of the announcement after the close of the stock exchange for the day or to the fact that a stock with a narrow market might not adjust itself as rapidly to market conditions. Therefore, the price behavior of a stock on the day after the announcement also is important. These then are the *two essential days for which price data have to be collected.* [5] In addition, the prices of dividend announcing stocks three days before the announcement are used in this study simply to establish a standard of comparison or base in calculating an index number of stock prices. [6] Likewise the prices on the day before the announcement are used in order to calculate the amount of price increase or decrease on the day of the announcement over the previous day. The result secured is a picture of the behavior of the dividend announcing stock at the time of the announcement of the dividend, the changes on the two days referred to expressed as percentages of the price of the stock three days before the announcement.

General method of analysis.—The original data which form the basis of this part of the study consist of one thousand (1000) announcements of cash dividends on common stocks. Common stocks are used because of their admitted greater sensitiveness to market conditions. Preferred stocks, having certain characteristics making them more like bonds than stocks (senior rank as stock, sometimes the cumulative dividend feature, etc.), are considered not nearly as satisfactory as market indicators. Of the total, one-half, or five hundred (500) are announcements that the usual rate of dividend is to be continued. This class of announcements is included for several reasons. First, it constitutes by far the *most usual* kind of

---

[5] Perhaps this question arises: Why stop with the day *after* the announcement? The answer is that if the study is carried beyond this point factors connected with *future* dividends are increasingly likely to enter to complicate the analysis. See pp. 37-38.

[6] See pp. 15–17.

announcement, and even though, *a priori*, it may be reasoned that the discounting of such announcements is perfect or nearly so ,it is worth while knowing just how effective the discounting is. Second, even though this is the most usual type of announcement, it is not always a foregone conclusion that the usual dividend will be continued; there is present the element of chance, especially in periods of "boom" and depression, that the former rate will be increased or cut. Finally, and by far the most important, the *time* of discounting (that is, the amount of advance notice given by the stock market as it forecasts the coming event) is perhaps as valuable in the case of continuation of the usual rate of dividend as in the case of changes. To know *when* the stock picks up in price the greater part of the approaching dividend in one sense is more valuable in the case of dividend continuations, because of the very fact of their numerical preponderance.

The remaining five hundred (500) are announcements that the former rate of dividend is changed; three hundred (300) that the dividend rate is increased over the previous rate; two hundred (200) that it is decreased.[7] This data represents 186 stocks[8] and the dividend history of almost every important corporation in the United States for almost two decades. The stocks are (or were, at the time of the announcement) listed on one or more of six of the leading stock exchanges of the country—the New York Stock Exchange, the New York Curb Market, the Boston Stock Exchange, the Philadelphia Stock Exchange, the Chicago Stock Exchange, and the Pittsburgh Stock Exchange. Naturally, the great majority represent

---

[7] The exact dates of the dividend announcements are not available, except in a few outstanding cases, in the columns of financial newspapers and magazines. For example, the *Commercial and Financial Chronicle* each week prints a very complete list of the dividends declared during the previous week, but the precise date is lacking. This information is found, as far as the author has been able to ascertain, in one source only, the daily news bulletin. From the files of the Philadelphia News Bureau was secured the list of 1000 dividend announcements referred to above, covering the period 1904–1922, inclusive. The value of this type of financial publication as source material is twofold: First, it is absolutely up to date in its news service; second, its reports of directors' meetings and their dividend announcements are very complete and reliable.

[8] See Appendix A.

stocks listed on the New York Stock Exchange, the largest stock market in the United States.[9]

Once having secured the list of dividend announcements, the next step was to secure the prices of the dividend announcing stocks on the four days mentioned previously. Most of the stock-price quotations required are available in the *Commercial and Financial Chronicle*. However, since the *Chronicle* during a part of the period at least did not print *daily* prices for all the exchanges represented in the study—notably the New York Curb—the remaining quotations were secured from the *Wall Street Journal*.

The price behavior of each of the 1000 dividend announcing stocks is analyzed in the following manner: The high and low prices of the stock on each of the four days mentioned previously are averaged and considered as the price of the stock. Using the average price of the first of the four days as a base, the prices on the remaining days are expressed as percentages of 100 per cent. Thus it is easy to compute the amount of change in price on the day of the announcement and on the day after the announcement. For example, if the average prices of Stock A are as follows:

January 2	$90.50	
January 4	90.75	
January 5	90.50	(the day of the announcement)
January 6	90.00	(the day after the announcement)

these prices converted into percentages of the price on the first of the four days are:

	PER CENT	CHANGE
January 2	100.0	
January 4	100.3	
January 5	100.0	−.3
January 6	99.3	−.7

or a net decline for the two days of 1.0 or 1 per cent.

---

[9] Following is a summary of the stocks classified according to the exchange on which listed:

New York Stock Exchange	159
New York Curb	11
Boston Stock Exchange	8
Chicago Stock Exchange	4
Philadelphia Stock Exchange	3
Pittsburgh Stock Exchange	1
	186

It is not possible, however, to determine the action of the stock at the announcement of the dividend without taking into consideration one other very important factor: general stock market influences. Up to this point no attempt has been made to ascertain the effect of general stock market conditions on the price behavior of a particular stock. Stock A, a steel stock, may drop in price at the time of the announcement, not because of the effect of the announcement itself, but because steel and industrial shares in general decline as a class and carry Stock A with them. If this general decline takes place, it is not correct to say that Stock A drops in price; Stock A's decline may be explained completely by the general drop, and in fact, if the general decline is greater than the decline in Stock A's price, Stock A *relatively* increases. In order to calculate the influence of *general* market factors on the prices of individual stocks, an index of general stock prices is necessary. Then it is possible to compare the price fluctuations of the specific dividend announcing stock with the general stock price level, determine the effect of the latter upon the former, and thus isolate those price changes due to the announcement alone. The price changes of a certain stock at the time of an announcement can be explained then in terms of that announcement alone, uncomplicated by general market influences.

The influence of the general level of stock prices is calculated as follows: An index number of general stock prices[10] is con-

[10] The average daily prices of industrials and railroads compiled by the *Wall Street Journal* are the basis of the index. These daily averages are expressed in dollars, and are the sole published average of daily stock prices. Following is the list of stocks making up each of the two averages:

Rails	*Industrials*
Atchison	Amalgamated Copper
Baltimore & Ohio	American Can
Canadian Pacific	American Car & Foundry
Chesapeake & Ohio	American Locomotive
Chicago, Milwaukee & St. Paul	American Smelting & Refining
Delaware & Hudson	American Sugar Refining
Denver & Rio Grande (pfd.)	American Tel. & Tel.
Illinois Central	Baldwin
Kansas City Southern	Central Leather
Lehigh Valley	Corn Products
Louisville & Nashville	General Electric
Manhattan Elevated Rwy.	Goodrich
Minneapolis & St. Louis	Republic Iron & Steel

structed in the same manner as is the index of prices for each particular dividend announcing stock, explained on previous pages. A comparison of the price changes of the dividend announcing stock with the changes in price of *similar* stocks, for the same days then makes possible the measurement of the influence of the latter on the former. For example:

	DIVIDEND ANNOUNCING STOCK			GENERAL STOCK PRICES			
		PER CENT	CHANGE		PER CENT	CHANGE	NET CHANGE
Jan. 2	$90.50	100.0	....	$65.12	100.0	....	....
Jan. 4	90.75	100.3	....	65.18	100.9	....	....
Jan. 5	90.50	100.0	−.3	64.25	98.6	−1.3	+1.0
Jan. 6	90.00	99.3	−.7	64.25	98.6	±0.0	−0.7
				Net change both days...			+0.3

In this illustration, the dividend announcing stock declines in price on January 5th, the day of the announcement, but this decline is fully explained by a much greater decline on the part of stocks as a whole. In fact, *relatively* Stock A has risen on January 5th, since its failure to decline as much as the group must be ascribed to a *specific* influence. The action of the dividend announcing stock on the day after the announcement, however, is contrary to the trend of the group, and is a real decline, due to the operation of a factor influencing the particular stock alone. Thus there is a relative increase on the day of the announcement, which is partially offset by a relative decline on the day after the announcement. The net change of the dividend announcing stock thus is an increase of three-tenths of 1 per cent.

(*Continued from page 16*)

New York Central
New York, New Haven & Hartford
Northern Pacific
Pennsylvania
Reading
Southern Rwy.
Union Pacific
Studebaker
Texas Company
U. S. Rubber
U. S. Steel
Utah Copper
Westinghouse
Western Union

Having analyzed the price behavior of the 1000 announcing stocks, it is next necessary to set up tests or standards of discounting. Then if the price variation of a stock falls within certain limits, in other words, complies with the conditions of the tests to determine discounting, the announcement may be said to be discounted. It is not intended to set up arbitrary standards, as will be discussed later, but to lay down common-sense rules based on observation of the market itself.

The tests of discounting.—The discounting function of the market as regards the announcement of cash dividends is demonstrated if the price behavior of the announcing stock on the day of the announcement (and on the day after the announcement) complies with or falls within the scope of *any one of the following three tests:* [11] (*a*) The test of perfect discounting. (*b*) The test of over-discounting. (*c*) The test of effective discounting.

(*a*) *The Test of Perfect Discounting*

Irrespective of whether the announcement is of an increased or decreased dividend or that the dividend will remain the same, a dividend is discounted perfectly when, on the day of the announcement (and on the day after the announcement),[12] the action of the dividend announcing stock is exactly the same as the action of the general level of prices of similar stocks. The effect of the announcement is nil. The results of the announcement are completely calculated in advance by the market. Whether the general price level rises, falls or remains the same, the dividend announcing stock conforms perfectly to the price behavior of the group with which it is related. The price behavior of the announcing stock is explained perfectly by the influence of the general factors, affecting

---

[11] These tests have to do solely with the question as to *whether* dividend announcements are discounted or not, that is, the percentage of cases in which the market discounts. Another, and perhaps more important question will be discussed in detail in later pages: *How far ahead* does this discounting take place?

[12] Hereafter, in the sections on the tests of discounting, whenever the phrase, "the day of the announcement" is used, the supplementary phrase, "the day after the announcement" is also understood.

all stocks of the same general class alike. The special factor, a dividend announcement, had no effect whatever.

(*b*) *The Test of Overdiscounting*

Announcement of an increase in dividend.—The announcement of an increase in dividend is discounted:

(*a*) When the dividend announcing stock declines in price, the general level of stock prices remaining the same; or (*b*) when the dividend announcing stock declines in price, and the general level of stock prices rises; or (*c*) when the dividend announcing stock declines in price to a greater extent than the decline of the general stock price level, or (*d*) when the dividend announcing stock rises in price, but less than the increase in the general level of prices.

A dividend announcement complying with any of these conditions would be *overdiscounted*. For example, let us take subdivision "(*d*)" of the above set of conditions. Suppose that the general price level of similar stocks rises from 100 per cent to 102 per cent; the price of the dividend announcing stocks rises from 100 per cent to 101 per cent. The special (dividend announcing) group thus fails to respond completely to the general price movements of its class. One might reasonably expect the special group to rise at least as much as other stocks of its kind. For the dividend announcing stock to rise considerably more would indicate a failure to discount since it then would be evident that a special factor, a dividend announcement, is operative, and is causing a price bulge not characteristic of the class of stocks as a whole. But to increase less than the general price level indicates that the announcement is just the opposite of being unexpected. The news of the announcement, instead of causing a rise in price, causes a relative decline. In a market comprising besides informed speculators, numbers of uninformed buyers, it is not reasonable to expect perfect discounting. In fact, all that students of the stock market claim for discounting is *approximate* accuracy. In other words, by their very ignorance of the discounting function, the uninformed are likely to inflate prices slightly previous to the day of the announcement. By purchasing stocks just before the date of the dividend announce-

ment in the belief that something more is gained than if the same stocks were bought a month or two months before, the stock may be bid too high, and overdiscounting may result when the actual announcement is made. Second, that which is more likely, the announcement is a signal to speculators to sell at the publication of the announcement, knowing that the uninformed buy when the so-called "good news" materializes thus causing a drop in price. Whatever the cause of the overdiscounting, it seems probable that the speculative public is usually not caught unawares.

Announcement of a decrease in dividend.—The announcement of a decrease in dividend is discounted:

(*a*) When the dividend announcing stock rises in price, the general level of stock prices remaining the same; or(*b*) when the dividend announcing stock rises in price, and the general level of stock prices declines; or (*c*) when the dividend announcing stock rises in price to a greater extent than the rise in the general stock price level; or (*d*) when the dividend announcing stock declines in price, but less than the decline in the general stock price level.

One characteristic is common to all four conditions: "(*a*)," "(*b*)," "(*c*)," "(*d*)." The dividend announcing stock increases *relatively* at the announcement of the so-called "bad news." That is, the market has anticipated the announcement, and instead of causing consternation and selling, the price rises. Just the opposite of the case of the announcement of the increase in dividend, it is undoubtedly true that the same forces cause a recovery in the case of the decrease as cause the decline in the case of the increase. The uninformed are willing to sell at hearing the news; it is for that reason an excellent chance to buy for the speculator, who basing his judgment on the operation of the discounting function, causes an increase in the price of the stock.

Announcement of continuation of the previous rate of dividend.—The announcement of the continuation of the former dividend is discounted when the price of the stock complies with the same conditions as are laid down for increases in

dividend. The two types of announcement have a common characteristic: they indicate good news to the investor and speculator. The continuation of the previous rate is different only in degree from the increase. Therefore, this kind of announcement is discounted:

(*a*) When the dividend announcing stock declines in price, the general level of stock prices remaining the same; or (*b*) when the dividend announcing stock declines in price, and the general level of stock prices rises; or (*c*) when the dividend announcing stock declines in price to a greater extent than the decline of the general stock price level; or (*d*) when the dividend announcing stock rises in price, but less than the rise in the general stock price level.

(*c*) *The Test of Effective Discounting*

It is futile, of course, to expect perfect discounting or over-discounting consistently. For reasons explained above, *approximate* accuracy of discounting only is claimed. The diverse character of the stocks makes anything more than approximate accuracy impossible. Therefore, it is only fair to credit the stock market with discounting when the failure to discount is comparatively slight. The announcement may be said to be *discounted in effect* when such substantial accuracy is obtained. The conditions establishing the tests of *effective discounting* will be described in the following sections.

Announcement of an increase in dividend.—The announcement of an increase in dividend is discounted in effect:

(*a*) When the dividend announcing stock increases in price only slightly more than the increase in the general level of stock prices; or (*b*) when the dividend announcing stock increases slightly in price, and the general level of stock prices remains the same, or (*c*) when the dividend announcing stock declines slightly less than the decline in the general level of stock prices.

It is true then in all three conditions, "(*a*)," "(*b*)," "(*c*)," of this test, the stock market fails to some extent to discount. Nevertheless, if such deviation of the special stock from the

general trend is relatively slight, the benefits of discounting are achieved. Just how large a margin of error should be permitted in the price behavior of a dividend announcing stock, and still consider the stock to show effective discounting, is a debatable point. Certainly if the dividend announcing stock shows discounting within ½ or even 1 per cent of accuracy (that is, shows a failure to discount of not more than ½ or 1 per cent)[13] to all intents and purposes discounting is demonstrated.[14]

Announcement of a decrease in dividend.—The announcement of a decrease in dividend is discounted in effect:

(*a*) When the dividend announcing stock decreases in price only slightly more than the decline in the general level of stock prices; or (*b*) when the dividend announcing stock decreases slightly in price, and the general level of stock prices remains the same; or (*c*) when the dividend announcing stock increases in price slightly less than the increase in the general level of stock prices.

Again, discounting is not perfect nor is there overdiscounting. Apparently, the news of the "cut" in dividend causes a relative drop in price. In condition "(*a*)" not all of the decline in the particular stock is explained by the decline in the general level; the *excess* decline is chargeable to the announcement. Likewise in conditions "(*b*)" and "(*c*)" the effect of the announcement is discerned. However, it would be unfair to charge the stock market with failure to discount when this variation is within the margins indicated above, for the reasons explained.

Announcement of continuation of the previous rate of dividend.—The same conditions as apply to the increase in

---

[13] See p. 26—(*c*)—for definition. The expressions: "One per cent of accuracy"; "2 per cent of accuracy"; "failure to discount by 1 per cent," etc., must not be interpreted, as later explained (pp. 27 *et seq.*) as an indication that the stock market is partially unsuccessful in discounting. As will be seen, it is fair to judge the market's capacity for discounting only in comparison with the magnitude and importance of the event discounted. For example, a "failure" of discounting of 2 per cent is really not a failure at all, if the dividend increase discounted amounts to 20, 50 or 100 per cent. The expressions as used are useful in this part of the study because of the necessity of making a classification of the results for purposes of analysis. This classification of results then is studied in the light of the events discounted. See pp. 34, 35. In succeeding pages it is of the greatest importance to remember the *relative* or *comparative* nature of such "inaccuracy."

[14] This standard is checked later by another method, and found to be substantially sound. See p. 37.

the dividend rate apply to this class of announcements. For the details of these conditions, see page 21.

Summary of results: The degree of discounting efficiency of the stock market.—The analysis of the data and the results observed are presented in the following tables. It is important to remember that the price behavior of each of the 1000 stocks is analyzed separately. The resumé which follows is simply a summary of the results obtained by application of the methods and tests of discounting discussed in the previous section.

For the sake of affording a number of various angles from which to discuss the data and the results, the data are classified:

(*a*) According to the general nature of the business of the corporation making the announcement; that is, whether rails or industrials.

(*b*) According to the state of general business conditions; that is, as to whether the announcement is made during depression or "boom"; improvement period, or period of decline.

The general state of business may very well be a factor complicating the function of discounting, since it so radically affects the prices of the stocks affected. While it is true that the method of analysis described in the previous section is intended to eliminate the effect of the general market on the price of a particular stock, it may, nevertheless, be true that a particular dividend announcing stock follows the general trend more sympathetically in "boom" than in depression period, or vice versa, and thus the effectiveness of discounting may be affected.

To calculate the effect of this influence, if any, the period under discussion, 1904–1922 inclusive, is divided into the various phases of the several business cycles comprised in this period. While a conventional division of the business cycle is into four phases—period of improvement; "boom"; decline, and depression—a glance at any chart representing an index of stock prices shows the practical difficulty of making a clean-cut division of a cycle into four such periods.[15] Rather than draw an

[15] See Babsonchart of American Business Conditions, Babson's Statistical Organization. Any issue. Also W. P. Hamilton, "The Stock Market Barometer." Charts in frontispiece.

arbitrary line and attempt to indicate precisely where one of these phases ends and another begins, the sub-periods of improvement and "boom" on the one hand, and the sub-periods of decline and depression on the other, whose limits are unmistakable, are combined. The characteristics of the sub-periods so combined are sufficiently alike to permit the combination for the purposes of this study. That is, generally speaking, stock prices, as a whole, act the same during the sub-periods of improvement-"boom"; also during the sub-periods of decline-depression. One is a combined period generally of rising prices; the other generally of falling prices.

One further question remains: Should the cycle under consideration be the cycle of general business conditions or the cycle of general stock prices? The cycles are not identical. Bank clearings of the United States are frequently used as an index of general business conditions. But if the data for bank clearings are plotted on a chart together with the average prices of representative stocks as an index of the stock-market cycle, the line representing the stock-market cycle would, with few exceptions, anticipate the general business line.[16] In other words, the stock market discounts not only specific events such as dividend announcements, but also general business conditions. Since it discounts general business conditions, it usually precedes, in its price changes, the changes in business it presages.[17] Obviously, then, the two cycles cannot be used interchangeably.

Since the matter of a dividend announcement is entirely a phenomenon of the stock market, the announcing stock should be analyzed in the light of the stock-market cycle, not of the general business cycle. As an index of general stock prices the average daily index of the *Wall Street Journal*, referred to in previous pages, is the basis for the classification of the announcing stocks by cycle-periods. And since the price factors affecting railroad stocks are different than those influencing industrials,

---

[16] See James H. Brookmire, "Methods of Forecasting Based on Fundamental Statistics," *American Economic Review*, March, 1913, Vol.II, p. 57.

[17] See Babsonchart of American Business Conditions, Babson's Statistical Organization, Inc. Any issue.

separate indices for each are used. Although the limits of the cycle-periods for the two classes are substantially the same, enough variations occur to make the use of the twofold index advisable.

The limits of the cycle-periods so formed are as follows:

Industrials.

The cycle: January 1, 1904–November 15, 1907, inclusive:

Period 1. Improvement-"boom"; Jan. 1, 1904 to Jan. 19, 1906, incl.
Period 2. Decline-depression; Jan. 20, 1906 to Nov. 15, 1907, incl.

The cycle: November 16, 1907–December 23, 1914, inclusive:

Period 3. Improvement-"boom"; Nov. 16, 1907 to Nov. 19, 1909, incl.
Period 4. Decline-depression; Nov. 20, 1909 to Dec. 23, 1914, incl.

The cycle: November 24, 1914–December 18, 1917, inclusive:

Period 5. Improvement-"boom"; Nov. 24, 1914 to Nov. 21, 1916, incl.
Period 6. Decline-depression; Nov. 22, 1916 to Dec. 18, 1917, incl.

The cycle: December 19, 1917–August 24, 1921, inclusive:

Period 7. Improvement-"boom"; Dec. 19, 1917 to Nov. 3, 1919, incl.
Period 8. Decline-depression; Nov. 4, 1919 to Aug. 24, 1921, incl.

The cycle: August 25, 1921–December 31, 1922, inclusive (end of period—cycle not completed):

Period 9. Improvement-"boom"; Aug. 25, 1921 to

Railroads.

The cycle: January 1, 1904–November 20, 1907, inclusive:

Period 10. Improvement-"boom"; Jan. 1, 1904 to Jan. 22, 1906, incl.
Period 11. Decline-depression; Jan. 23, 1906 to Nov. 20, 1907, incl.

The cycle: November 21, 1907–December 23, 1914, inclusive:

Period 12. Improvement-"boom"; Nov. 21, 1907 to Dec. 30, 1909, incl.
Period 13. Decline-depression; Dec. 31, 1909 to Dec. 23, 1914, incl.

The cycle: December 24, 1914–December 18, 1917, inclusive:

Period 14. Improvement-"boom"; Dec. 24, 1914 to Nov. 6, 1916, incl.
Period 15. Decline-depression; Nov. 7, 1916 to Dec. 18, 1917, incl.

The cycle: December 19, 1917–June 20, 1921, inclusive:

Period 16. Improvement-"boom"; Dec. 19, 1917 to May 27, 1919, incl.
Period 17. Decline-depression; May 28, 1919 to June 20, 1921, incl.

The cycle: June 21, 1921–December 31, 1922, inclusive (end of period—cycle not completed):

Period 18. Improvement-"boom"; June 21, 1921 to

Tables A, B, and C, which follow, summarize the results of the analysis of announcements of continuation of the same rate of dividend, of increase in the dividend, and of decrease in the dividend, respectively. The results are classified by frequencies —that is, the tables indicate the number of stocks showing discounting within ⅓ of 1 per cent accuracy; the number of stocks showing between ⅓ and ½ per cent accuracy; the number showing between ½ and 1 per cent accuracy, etc. By the expression "within 1 per cent accuracy" is meant that the stock showed one of the following results, any one of which establishes the fact that the announcement is discounted:

(*a*) Perfect discounting.

(*b*) Overdiscounting.

(*c*) Failure of discounting so slight that the price of the dividend announcing stock did not vary more than 1 per cent from the general trend. In other words, the outside limit of inaccuracy of discounting is 1 per cent.

Columns 1 to 6 then in their order from left to right represent a progressively decreasing capacity of the market to discount. The greater the proportion of the whole number of announcements appearing in the first three columns to the left, the more effective the discounting capacity indicated. Each of the columns is in turn divided to show the degree of discounting effectiveness both on the day of the announcement and for the two days combined (D.A.: day of announcement; B.D.: day of announcement and day after the announcement combined).

Conclusions.—A study of the tables on pages 28-33, inclusive, leads to the following conclusions.

(*a*) The stock market shows its greatest capacity for discounting, naturally, in the case of announcements of no change in the dividend rate (see Table A). Even in this class of announcements, however, discounting is not perfectly shown, as is indicated by the fact that of the entire group of these announcements, there is discounting (for both days combined)

in 82.8 per cent of the total, or 17.2 per cent less than a perfect showing (using 1 per cent of accuracy as the standard of effective discounting). Although this is a high percentage of cases indicating effective discounting, the fact that there is a comparative failure to discount in the case of 17.2 per cent of the total indicates that there exists an element of uncertainty even when the dividend rate is not changed.[18]

Announcements of increases of dividends rank second as regards the ability of the stock market to forecast. For the day of the announcement, the results show effective discounting in 68.3 per cent of the total number of cases; for the two days combined, effective discounting in 66.0 per cent of the total. It is true that the results are not as nearly perfect as for the announcements of no change. Two outstanding factors must be kept in mind at this point, in judging the discounting function of the market. First, the comparative strictness of the test or standard which defines effective discounting. This has been set at 1 per cent, a test which imposes rather narrow limits as a basis of measurement. A glance at the cumulative figures in Table B shows the effect of analyzing the same results by measuring the efficiency of discounting within 2 per cent of accuracy. Respectively, for the day of the announcement and for the two days combined the results become 83.0 per cent and 80.3 per cent. Second, and more important, these results are the more significant when the comparative failure of the market to discount is studied in the light of the extent of the increases in the dividend rates concerned. The failure of the market to discount accurately the announcements of dividend increase is shown to be relatively slight when compared with the amounts of the increases themselves. For example, in the following tabulation it is seen that although in 5.7 per cent of the total number of announcements of increase (both days combined), there is a failure to discount the announcements by 5 per cent or more (that is, there is 5 per cent or more inaccuracy of discounting), the fact that these announcements are of increases in dividend income as high as 200 per cent, makes the failure

[18] The relative nature of this "failure" must be kept in mind. See p. 22, footnote 13.

TABLE A.—EFFECTIVENESS OF DISCOUNTING—ANNOUNCEMENTS OF NO CHANGE

Sub-Period	PERCENTAGE OF ACCURACY WITHIN: ⅓ OF 1		⅓—½		½—1		1—2		2—5		5 AND OVER		CUMULATIVE	D.A.	B.D.
	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.			
IMP.-BOOM											INDUST.		188 Cases		
1	37	43	1	2	7	3	7	5	5	4	0	0	Disctg. within ⅛ of 1%	65.4	65.4
3	45	39	3	7	4	6	7	5	4	5	4	5	" " ½ " 1%	68.6	72.3
5	14	14	1	1	2	2	5	4	1	2	0	0	" " 1%	78.1	79.7
7	27	27	1	3	5	3	7	6	1	2	0	0	" " 2%	92.0	90.4
9	..	..	..	..	..	..	..	..	..	..	..	..	" " 5%	97.8	97.3
Total No. of cases	123	123	6	13	18	14	26	20	11	13	4	5			
Per. of total cases	65.4	65.4	3.2	6.9	9.5	7.4	13.9	10.7	5.8	6.9	2.1	2.7			
DEC.-DEP.											INDUST.		84 Cases		
2	59	51	2	2	9	11	3	6	2	4	0	1	Disctg. within ⅛ of 1%	76.2	67.9
4	..	..	..	..	..	..	..	..	..	..	..	..	" " ½ " 1%	78.6	71.4
6	4	5	0	1	2	0	0	0	1	1	0	0	" " 1%	92.9	84.5
8	1	1	0	0	1	0	0	0	0	1	0	0	" " 2%	96.4	91.64
	..	..	..	..	..	..	..	..	..	..	..	..	" " 5%	99.9	98.8
Total No. of cases	64	57	2	3	12	11	3	6	3	6	0	1			
Per. of total cases	76.2	67.9	2.4	3.5	14.3	13.1	3.5	7.14	3.5	7.14	..	1.2			
IMP.-BOOM											RAILS		189 Cases		
10	57	57	6	6	11	8	5	4	2	6	0	0	Disctg. within ⅛ of 1%	66.7	68.8
12	44	48	5	3	12	9	6	6	2	3	0	0	" " ½ " 1%	75.7	74.1
14	10	11	4	1	2	1	1	4	0	0	0	0	" " 1%	89.4	86.3
16	15	14	2	0	1	5	4	1	0	2	0	0	" " 2%	97.8	94.2
18	..	..	..	..	..	..	..	..	..	..	..	..	" " 5%	99.9	100.0
Total No. ofcases	126	130	17	10	26	23	16	15	4	11	0	0			
Per. of total cases	66.7	68.8	9.0	5.3	13.7	12.2	8.4	7.9	2.1	5.8	..	..			

TABLE A.—EFFECTIVENESS OF DISCOUNTING—ANNOUNCEMENTS OF NO CHANGE—*Continued*

Sub-Period.....	WITHIN ⅓ OF 1		⅓—½		½—1		1—2		2—5		5 AND OVER				
	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	CUMULATIVE	D.A.	B.D.
DEC.-DEP.											RAILS		39 Cases		
11.....	16	19	3	1	7	2	2	5	1	2	0	0	Disctg. within ⅓ of 1%..	61.5	61.5
13.....	..	..	..	..	..	..	..	..	..	..	..	..	" " ½ " 1%..	71.8	69.2
15.....	4	4	0	0	0	0	0	0	0	0	0	0	" " 1%.....	89.7	76.9
17.....	4	1	1	2	0	1	1	1	0	1	0	0	" " 2%.....	97.4	92.3
													" " 5%.....	99.9	100.0
Total No. of cases	24	24	4	3	7	3	3	6	1	3	0	0			
Per. of total cases	61.5	61.5	10.3	7.7	17.9	7.7	7.7	15.4	2.5	7.7	..	..			

ALL	No Change												500 Cases		
Total number of cases.....	337	334	29	29	63	51	48	47	19	33	4	6	Disctg. within ⅓ of 1%..	67.4	66.8
Percentage of total cases.....	67.4	66.8	5.8	5.8	12.6	10.2	9.6	9.4	3.8	6.6	0.8	1.2	" " ½ " 1%..	73.2	72.6
													" " 1%.....	85.8	82.8
													" " 2%.....	95.4	92.2
													" " 5%.....	99.2	98.8

LEGEND

IMP.-BOOM = Improvement-Boom Periods (see p. 25). DEC.-DEP. = Decline-Depression Periods (see p. 25). SUB-PERIOD = of cycles listed on p. 25. D.A. = Results of day of dividend announcement. B.D. = Results for both days combined (day of announcement and day after announcement). IND. = Industrial stocks. RAILS = Railroad stocks.

TABLE B.—EFFECTIVENESS OF DISCOUNTING—ANNOUNCEMENTS OF INCREASE

PERCENTAGE OF ACCURACY WITHIN

Sub-Period.....	⅓ OF 1		⅓—½		½—1		1—2		2—5		5 AND OVER				
	D.A.	B.D.	D.A.	B.D.	D.A.	E.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	CUMULATIVE	D.A.	B.D.
IMP.-BOOM											IND	UST.	104 Cases		
1.....	3	1	0	2	0	1	1	0	0	0	0	0	Disctg. within ⅓ of 1%..	59.6	46.1
3.....	2	1	0	0	0	0	0	0	0	1	0	0	" " ½ " 1%..	64.4	51.9
5.....	37	32	4	3	2	3	5	7	11	13	3	4	" " 1%.....	67.3	61.5
7.....	18	12	1	1	1	5	4	4	6	7	1	2	" " 2%.....	79.8	73.0
9.....	2	2	0	0	0	1	3	1	0	0	0	1	" " 5%.....	96.1	93.2
Total No. of cases	62	48	5	6	3	10	13	12	17	21	4	7			
Per. of total cases	59.6	46.1	4.8	5.8	2.9	9.6	12.5	11.5	16.3	20.2	3.8	6.7			
DEC.-DEP.											INDUST.		141 Cases		
2.....	6	6	1	1	1	4	5	1	1	2	1	1	Disctg. within ⅓ of 1%..	54.6	51.7
4.....	13	9	4	1	1	4	2	6	4	4	0	0	" " ½ " 1%..	61.7	56.7
6.....	39	39	4	3	7	4	6	10	5	5	3	3	" " 1%.....	68.8	68.0
8.....	19	19	1	2	1	4	8	5	6	3	3	5	" " 2%.....	83.6	83.6
													" " 5%.....	95.0	93.6
Total No. of cases	77	73	10	7	10	16	21	22	16	14	7	9			
Per. of total cases	54.6	51.7	7.1	5.0	7.1	11.3	14.8	15.6	11.4	10.0	5.0	6.4			
IMP.-BOOM											RAILS		23 Cases		
10.....	6	8	1	0	0	0	1	0	0	0	0	0	Disctg. within ⅓ of 1%..	65.2	65.2
12.....	3	5	1	1	1	0	1	0	0	0	0	0	" " ½ " 1%..	78.3	69.6
14.....	3	2	1	0	0	1	0	0	0	1	0	0	" " 1%.....	82.6	78.3
16.....	..	..	..	..	..	..	..	..	..	..	..	..	" " 2%.....	91.3	87.0
18.....	3	0	0	0	0	1	0	2	2	2	0	0	" " 5%.....	100.0	100.0
Total No. of cass	15	15	3	1	1	2	2	2	2	3	0	0			
Per. of total cases	65.2	65.2	13.1	4.4	4.3	8.7	8.7	8.7	8.7	13.0	..	..			

TABLE B.—EFFECTIVENESS OF DISCOUNTING—ANNOUNCEMENTS OF INCREASE—*Continued*

Sub-Period.....	WITHIN ⅓ OF 1		⅓—½		½—1		1—2		2—5		5 AND OVER		CUMULATIVE	D.A.	B.D.
	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.			
DEC.-DEP.											RAILS		32 Cases		
11.....	0	0	0	0	1	2	2	2	3	1	0	1	Disctg. within ⅓ of 1%..	37.5	18.7
13.....	9	5	0	2	2	6	3	1	1	1	0	0	" " ½ " 1%..	40.6	28.1
15.....	2	1	1	1	3	2	3	4	1	2	0	0	" " 1%.....	59.4	62.5
17.....	1	0	0	0	0	1	0	0	0	0	0	0	" " 2%.....	84.4	84.4
													" " 5%.....	100.0	96.9
Total number of cases.....	12	6	1	3	6	11	8	7	5	4	0	1			
Percentage of total cases.....	37.5	18.7	3.1	9.4	18.8	34.4	25.0	21.9	15.6	12.5	..	3.1			

ALL	Increases												300 Cases		
Total number of cases.....	16	142	19	17	20	39	44	43	40	42	11	17	Disctg. within ⅓ of 1%..	55.3	47.3
Percentage of total cases.....	55.3	47.3	6.3	5.7	8.7	13.0	14.	14.3	13.3	14.0	3.7	5.7	" " ½ " 1%..	61.6	53.0
													" " 1%.....	68.3	66.0
													" " 2%.....	83.0	80.3
													" " 5%.....	96.3	94.3

LEGEND

IMP.-BOOM = Improvement-Boom Periods (see p. 25). DEC.-DEP. = Decline-Depression Periods (see p. 25). SUB-PERIOD = of cycles listed on p. 25. D.A. = Results of day of dividend announcement. B.D. = Results for both days combined (day of announcement and day after announcement). IND. = Industrial stocks. RAILS = Railroad stocks.

TABLE C.—EFFECTIVENESS OF DISCOUNTING—ANNOUNCEMENTS OF DECREASE

PERCENTAGE OF ACCURACY WITHIN

Sub-Period.....	⅓ OF 1		⅓—½		½—1		1—2		2 OF 5		5 AND OVER				
	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	CUMULATIVE	D.A.	B.D.
IMP.-BOOM											IND	UST.	49 Cases		
1.....	0	2	0	0	0	0	2	1	3	2	2	2	Disctg. within ⅓ of 1%..	38.8	36.7
3.....	8	7	0	0	2	1	3	2	0	3	0	0	" " ½ " 1%..	40.8	40.8
5.....	7	5	1	2	1	1	3	1	0	2	1	2	" " 1%.....	47.0	44.9
7.....	4	3	0	0	0	0	2	0	3	4	0	2	" " 2%.....	69.4	57.1
9.....	0	1	0	0	0	0	1	2	2	0	4	4	" " 5%.....	85.7	79.5
Total No. of cases	19	18	1	2	3	2	11	6	8	11	7	10			
Per. of total cases	38.8	36.7	2.0	4.1	6.2	4.1	22.4	12.2	16.3	22.4	14.3	20.4			
DEC.-DEP.											INDUST.		101 Cases		
2.....	1	1	0	0	1	0	0	1	1	1	0	0	Disctg. within ⅓ of 1%..	35.6	38.6
4.....	7	8	0	0	0	0	1	1	3	2	1	1	" " ½ " 1%..	37.6	39.6
6.....	1	0	0	0	0	0	0	1	0	0	0	0	" " 1%.....	42.6	44.6
8.....	27	30	2	1	4	5	11	4	29	22	12	23	" " 2%.....	54.4	51.5
													" " 5%.....	87.1	76.2
Total No. of cases	36	39	2	1	5	5	12	7	33	25	13	24			
Per. of total cases	35.6	38.6	2.0	1.0	5.0	5.0	11.8	6.9	32.7	24.7	12.8	23.7			
IMP.-BOOM											RAILS		25 Cases		
10.....	2	3	0	0	0	0	1	0	0	0	0	0	Disctg. within ⅓ of 1%..	60.0	52.0
12.....	3	2	0	0	1	1	0	0	3	1	0	3	" " ½ " 1%..	60.0	52.0
14.....	3	3	0	0	0	0	0	0	1	1	1	1	" " 1%.....	68.0	64.0
16.....	2	1	0	0	0	1	0	0	1	0	0	1	" " 2%.....	72.0	64.0
18.....	5	4	0	0	1	1	0	0	1	1	0	1	" " 5%.....	96.0	76.0
Total No. of cases	15	13	0	0	2	3	1	0	6	3	1	6			
Per. of total cases	60.0	52.0	..	..	8.0	12.0	4.0	..	24.0	12.0	4.0	24.0			

TABLE C.—EFFECTIVENESS OF DISCOUNTING—ANNOUNCEMENTS OF DECREASE—*Continued*

Sub-Period.....	WITHIN ⅓ OF 1		⅓—½		½—1		1—2		2—5		5 AND OVER				
	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	CUMULATIVE	D.A.	B.D.
DEC.-DEP.											RAILS		25 Cases		
11.....	0	0	1	0	0	0	0	1	0	0	0	0	Disctg. within ⅓ of 1%..	16.0	24.0
13.....	3	4	4	1	1	2	4	3	3	3	3	5	" " ½ " 1%..	40.0	28.0
15.....	..	..	..	..	..	..	..	..	..	..	..	..	" " 1%.....	44.0	36.0
17.....	1	2	1	0	0	0	2	0	2	3	0	1	" " 2%.....	68.0	52.0
													" " 5%.....	88.0	76.0
Total No, of cases	4	6	6	1	1	2	6	4	5	6	3	6			
Per. of total case	16.0	24.0	24.0	4.0	4.0	8.0	24.0	16.0	20.0	24.0	12.0	24.0			

ALL	Decreases												200 Cases		
Total number of cases.....	74	76	9	4	11	12	30	17	52	45	24	46	Disctg. within ⅓ of 1%..	37.0	38.0
Percentage of total cases.....	37.0	38.0	4.5	2.0	5.5	6.0	15.0	8.5	26.0	22.5	12.0	23.0	" " ½ " 1%..	41.5	40.0
													" " 1%.....	47.0	46.0
													" " 2%.....	62.0	54.5
													" " 5%.....	88.0	77.0

LEGEND

IMP.-BOOM = Improvement-Boom Periods (see p. 25). DEC.-DEP. = Decline-Depression Periods (see p. 25). SUB-PERIOD = of cycles listed on p. 25. D.A. = Results of day of dividend announcement. B.D. = Results for both days combined (day of announcement and day after announcement). IND. = Industrial stocks. RAILS = Railroad stocks.

to discount relatively unimportant. It is manifestly not a serious failure of discounting when the dividend rate is increased from 2 to 4 per cent (an increase in dividend income of 100 per cent), and the stock market fails to discount such an announcement even to the extent of 5 per cent. In many of the cases of an increase of dividend it is impossible to calculate mathematically the rate of increase of dividend income—when the initial dividend is paid on stock or a passed dividend is restored. This increase cannot be measured; therefore, the following tabulation is conservative in that it indicates only those ranges of increase that may be mathematically expressed.

TABLE D

COMPARATIVE TABLE—EFFECTIVENESS OF DISCOUNTING AND RANGES OF DIVIDEND INCREASE

ACCURACY OF DISCOUNTING PER CENT WITHIN	EFFECTIVENESS OF DISCOUNTING PER CENT		RANGES OF INCREASE IN DIVIDEND INCOME PER CENT	
	D.A.	B.D.	LOW	HIGH
⅓ of 1	55.3	47.3	3.6	240.0
⅓—½	6.3	5.7	16.6	100.0
½—1	6.7	13.0	6.6	200 0
1—2	14.7	14.3	20.0	150.0
2—5	13.3	14.0	20.0	250.0
5 and over[19]	3.7	5.7	25.0	200.0
Total	100.0	100.0	....	.....

It will be noted that the absolute size of dividend increase apparently has no effect on the discounting function of the market. By far the greater number of cases falls within the first horizontal column (indicating the closest approach to perfect discounting). This column shows at the same time a higher amount of dividend increase than any other with one exception. It is just as easy to discount large increases as small —the nature of the stock and of the issuing corporation seems to have more weight than the nature of the announcement.

[19] A separate analysis of each item in this group shows the same results as for the group as a whole, *i. e., in every case,* the percentage of deviation from perfect discounting is more than compensated by the amount of increase in dividend income.

In turn, announcements of decrease of dividend are discounted less effectively than are the other two classes discussed. For the day of the announcement and two days combined, respectively, the percentage of effectiveness of discounting (within 1 per cent of accuracy) is 47.0 and 46.0. Here also, it is proper to analyze the discounting function of the market in the light of the size of the dividend reductions involved. The following comparative table combines the elements desirable for a proper analysis.

TABLE E

COMPARATIVE TABLE—EFFECTIVENESS OF DISCOUNTING AND RANGES OF DIVIDEND DECREASE

ACCURACY OF DISCOUNTING PER CENT WITHIN	EFFECTIVENESS OF DISCOUNTING PER CENT		RANGES OF DECREASE IN DIVIDEND INCOME PER CENT	
	D.A.	B.D.	LOW	HIGH
⅓ of 1	37.0	38.0	12.5	100
⅓—½	4.5	2.0	40.0	100
½—1	5.5	6.0	20.0	100
1—2	15.0	8.5	28.6	100
2—5	26.0	22.5	16.6	100
5 and over[20]	12.0	23.0	20.0	100
Total	100.0	100.0	....	....

It will be noted that in Table E the greatest percentage of decrease in dividend income is 100 per cent in each class. This is because the "passing" or non-payment of a dividend represents the greatest possible decline in dividend income, whether the former rate is 1, 2 or 5 per cent. The same general characteristics appear as in Table D.

(*b*) Analyzing the discounting effectiveness of the stock market from the viewpoint of the kind of stock involved (rails or industrials) somewhat the better showing is made in the case of railroads. It will be seen from Table F below that while

[20] A separate analysis of each item in this group shows the same results as for the group as a whole, *i. e., in every case,* the percentage of deviation from perfect discounting is more than compensated by the amount of decrease in dividend income.

industrials as a class are effectively discounted (both days combined) in 67.2 per cent of the total number of cases, railroads are discounted in 76.9 per cent of the total number of cases. Announcements of dividends by railroads make a consistently better showing regardless of the nature of the announcement—continuation of the former rate, increase or decrease. This is without doubt due to the fact that for the greater part of the period of time under investigation (1904–1922) railroads, as a group, constituted a higher type of investment security than industrials.

TABLE F
COMPARATIVE TABLE—EFFECTIVENESS OF DISCOUNTING
(WITHIN 1 PER CENT ACCURACY)

NATURE OF ANNOUNCEMENT	INDUSTRIALS				RAILROADS			
	CASES SHOWING DISCOUNTING WITHIN 1 PER CENT ACCURACY				CASES SHOWING DISCOUNTING WITHIN 1 PER CENT ACCURACY			
	NUMBER		PER CENT OF TOTAL		NUMBER		PER CENT OF TOTAL	
	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.
A. No change in dividend....	225	221	82.7	81.2	204	193	89.4	84.6
B. Increase in dividend....	167	160	68.1	65.3	38	38	69.1	69.1
C. Decrease in dividend....	66	67	44.0	44.6	28	25	56.0	50.0
Total number cases showing Discounting within 1 per cent.....	458	448	68.6	67.2	270	256	81.1	76.9

(*c*) In analyzing the comparative efficiency of the stock market in discounting in periods of boom and improvement as contrasted with periods of decline and depression, there is remarkably little difference between the two. At some points the former shows the best results; at some the latter. If any

may be said to be superior, on the whole, the period of boom-improvement shows slightly the better results. This slight superiority, if it be allowed, is not difficult to understand in the case of announcements of no change and of increase in dividend. In the period of boom-improvement the natural buoyancy of the general market may well conceal relatively small failures to discount. The consolidated table below shows, however, that in the cases of decreases of dividend, the superiority of the discounting function is most marked. Such a result seems to point out that the professional speculator is not blinded to the virtues and defects of a particular stock by a general market condition of inflation and rising prices.

TABLE G

COMPARATIVE TABLE—EFFECTIVENESS OF DISCOUNTING
(WITHIN 1 PER CENT ACCURACY)

NATURE OF ANNOUNCEMENT	IMPROVEMENT-BOOM				DECLINE-DEPRESSION			
	CASES SHOWING DISCOUNTING WITHIN 1 PER CENT ACCURACY				CASES SHOWING DISCOUNTING WITHIN 1 PER CENT ACCURACY			
	NUMBER		PER CENT OF TOTAL		NUMBER		PER CENT OF TOTAL	
	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.
A. No change in dividend....	316	313	83.8	83.0	113	101	91.8	82.1
B. Increase in dividend....	73	65	57.5	51.2	116	116	67.0	67.0
C. Decrease in dividend....	40	38	54.0	51.3	54	54	42.8	42.8
Total number cases showing discounting within 1 per cent.....	429	416	74.2	62.0	283	271	67.1	64.2

Supplementary Method of Determining Effectiveness of Discounting.—A check on the accuracy and essential sound-

ness of the method explained in the preceding pages is applied at this point. A moment's thought will show that another method of testing whether the stock market does or does not discount dividend announcements is applicable. One way of estimating approximately the ability of the market to discount is to study the course of the prices of the stock for some time *after* the time of the announcement. In the case of an announcement of increase of dividend, for illustration, the stock should reach its highest price at or about the time of the announcement itself. If the announcement has been fully expected, no further considerable rise should take place. If a considerable *advance* does take place after the news is made public, it is *possibly* an indication of the partial failure to discount. If no material change in price is shown after the announcement (considering the general market trend), discounting is *possibly* indicated. For example, a stock selling at 40 at the time of the announcement rises to 45 after the announcement (a price change contrary to the general market). Such an advance *possibly* shows failure to discount. The words "possible" and "possibly" are used advisedly, because while this method of checking (which we may call Method 2 for estimating discounting efficiency) is useful in safeguarding against essential inaccuracies in our first and main method (Method 1) it has serious limitations. First, it provides no means of *measuring* the *comparative* success or failure of the stock market to discount. It simply states that the dividend *is* or *is not* discounted—no further comparison is possible. Further, it is unwise to lean too heavily upon Method 2 as a positive index of discounting, because, directly after the announcement of the *current* dividend is made, it must be kept in mind that the price changes of the stock are increasingly affected by the prospects for the *next* dividend. The increase in price of our stock might be completely due, not to the failure of the market to discount the *current* dividend, but to its anticipation of the effects of the *coming* dividend announcement.

Likewise, in the case of announcement of a decrease, the price of the stock at about the time of the announcement should be at approximately its lowest and should not materially decline

thereafter. In the case of a dividend remaining the same, the same reasoning applies as to the increase in dividend.

Using Method 2, not as a positive test of discounting effectiveness, but as a supplementary check on Method 1, the results are highly interesting. Invariably, the results yielded by the use of Method 1 are corroborated by Method 2's results. That is to say, that adopting the test of 1 per cent accuracy as our standard of discounting, without exception the announcements shown to be discounted by Method 1 are shown also to be discounted by the second method.

B. The Time of Discounting.

Introduction—General method of analysis.—But in addition to knowing the percentage of cases in which discounting is found, a still more important question arises. Just how far in advance of the event does the market register its forecast in the form of price quotations? This part of the study consists of an analysis of those stocks showing discounting as described in the previous section. Since in the cases of these stocks no considerable movement in the price of the stocks takes place at the time of the announcement, the change must have taken place some time previously. That is, if the market discounts the continuation of the same rate of dividend on a stock, and no great movement in price takes place at the time of the announcement, the accrued dividend must have been added before the time of the announcement. At some time previously, there is a variation *upward* from the market trend. This point indicates the *time* of discounting. Likewise, in the case of a dividend increase, this variation is upward from the general market. In the case of a decrease the opposite is true; a variation *downward* marks the time of discounting.

The *time* of discounting has been localized by monthly periods. Using the same method of comparing the particular stock price with the general stock-price level as was used in ascertaining the efficiency of the market in discounting, the comparison of prices is carried backward from the time of the announcement. No arbitrary standard is set up as to the number of months within which to limit the scope of this part of the study. The data

themselves determine how far back the analysis is to go. The time of discounting is distinguished almost without exception by that space in time (monthly period) showing the *greatest variation* of the dividend announcing stock from the general market. However, in certain cases, where there is more than one such variation in the same direction of equal or nearly equal magnitude, the first is taken as showing the time of discounting. Even though the entire increase does not take place within one monthly period, the earlier increase is the first sign of discounting.

Tables H, I, and J which follow, summarize the results of this analysis:

TABLE H

NUMBER OF MONTHS STOCK MARKET INDICATES ANNOUNCEMENTS IN ADVANCE

IMP.-BOOM	NO CHANGE IN RATE										INDUSTRIALS
..	1	2	3	4	5	6	7	8	9	10	Total
1	11	17	11	4	3	..	..	..	..	..	46
3	11	18	17	5	..	..	..	..	..	..	51
5	4	4	6	1	1	..	..	..	..	..	16
7	11	13	5	3	1	..	..	..	..	..	33
9											
Number.....	37	52	39	13	5	..	..	..	..	..	146
Total of %..	25.3	35.6	26.7	9.0	3.4	..	..	..	..	..	100.0

DECLINE-DEPRESSION	NO CHANGE IN RATE										INDUSTRIALS
2	24	21	12	6	1	..	..	..	..	..	64
4											
6	3	..	2	..	..	..	..	..	..	..	5
8											
Number.....	27	21	14	6	1	..	..	..	..	..	69
Total of %..	39.1	30.4	20.3	8.7	1.5	..	..	..	..	..	100.0

TABLE H—*Continued*

IMP.-BOOM	NO CHANGE IN RATE										RAILS
10	24	20	23	1	2	..	..	..	..	..	70
12	15	16	20	7	1	..	..	..	..	..	59
14	4	1	4	1	1	..	..	..	..	..	11
16	7	4	3	4	1	..	..	..	..	..	19
18											
Number.....	50	41	50	13	5	..	..	..	..	..	159
Total of %..	31.4	25.9	31.4	9.1	3.2	..	..	..	..	..	100.0

DECLINE-DEPRESSION	NO CHANGE IN RATE										RAILS
11	7	9	4	1	1	..	..	..	..	..	22
13											
15	..	3	1	..	..	..	..	..	..	..	4
17	2	1	..	..	..	..	..	..	..	..	3
Number.....	9	13	5	1	1	..	..	..	..	..	29
Total of %..	31.0	45.0	17.2	3.4	3.4	..	..	..	..	..	100.0
SUMMARY											
Total number	123	127	108	33	12	..	..	..	..	..	403
Total of %..	30.5	31.5	26.8	8.2	3.0	..	..	..	..	..	100.0

TABLE I

NUMBER OF MONTHS STOCK MARKET INDICATES ANNOUNCEMENTS IN ADVANCE

IMP.-BOOM	INCREASE IN RATE										INDUSTRIALS
Sub-Period..	1	2	3	4	5	6	7	8	9	10	Total
1	..	1	1	1	..	1	..	..	..	..	4
3	..	1	..	..	..	..	..	..	..	..	1
5	7	10	3	6	6	2	1	..	..	..	35
7	4	2	1	4	4	1	..	1	1	..	18
9	1	..	1	1	1	..	..	..	..	..	4
Number.....	12	14	6	12	11	4	1	1	1	..	62
Total of %..	19.4	22.6	9.7	19.4	17.7	6.4	1.6	1.6	1.6	..	100.0

TABLE I—*Continued*

DECLINE-DEPRESSION	INCREASE IN RATE										INDUSTRIALS
2	6	2	1	..	1	1	..	..	..	..	11
4	3	2	..	2	3	2	..	..	..	..	12
6	4	10	3	19	5	3	1	..	..	..	45
8	3	..	4	10	3	..	1	2	..	..	23
Number.....	16	14	8	31	12	6	2	2	..	..	91
Total of %..	17.6	15.4	8.8	34.1	13.1	6.6	2.2	2.2	..	..	100.0

IMP.-BOOM	INCREASE IN RATE										RAILS
10	2	1	1	..	..	1	..	..	..	..	5
12	1	..	1	2	1	..	..	..	..	..	5
14	..	..	..	..	1	..	1	..	..	..	2
16	1	2	..	..	..	..	..	..	..	..	3
18											
Number.....	4	3	2	2	2	1	1	..	..	..	15
Total of %..	26.7	20.0	13.3	13.3	13.3	6.7	6.7	..	..	..	100.0

DECLINE-DEPRESSION	INCREASE IN RATE										RAILS
11	..	..	..	1	..	1	..	..	..	..	2
13	4	1	3	2	2	..	..	..	..	..	12
15	1	1	1	1	..	..	..	..	..	..	4
17											
Number.....	5	2	4	4	2	1	..	..	..	..	18
Total of %..	27.8	11.1	22.2	22.2	11.1	5.6	..	..	..	..	100.0
SUMMARY											
Total number	37	33	20	49	27	12	4	3	1	..	186
Total of %..	20.0	17.7	10.8	26.3	14.5	6.5	2.1	1.5	0.5	..	100.0

TABLE J

NUMBER OF MONTHS STOCK MARKET INDICATES ANNOUNCEMENTS IN ADVANCE

IMP.-BOOM	DECREASE IN RATE										INDUSTRIALS
Sub-Period..	1	2	3	4	5	6	7	8	9	10	Total
1	..	..	..	1	..	..	..	..	..	..	1
3	2	1	1	1	2	1	..	..	..	..	8
5	..	2	1	..	..	..	..	..	..	..	3
7	..	..	..	2	1	..	..	..	..	..	3
9											
Total number	2	3	2	4	3	1	..	..	..	..	15
Total of %..	13.3	20.0	13.3	26.7	20.0	6.7	..	..	..	..	100.0

TABLE J—*Continued*

DECLINE-DEPRESSION	DECREASE IN RATE										INDUSTRIALS
2	..	..	..	1	..	..	..	..	..	..	1
4	1	1	..	1	1	..	1	..	..	..	5
6											
8	7	2	2	4	7	4	4	2	3	..	35
Total number	8	3	2	6	8	4	5	2	3	..	41
Total of %..	19.5	7.3	4.9	14.6	19.5	9.8	12.2	4.9	7.3	..	100.0

IMP.-BOOM	DECREASE IN RATE										RAILS
10	..	..	2	..	..	..	..	..	..	..	2
12	..	..	..	..	1	1	1	..	..	..	3
14	..	..	1	..	..	..	..	..	..	..	1
16	..	..	..	1	..	..	..	..	..	..	1
18	1	..	2	1	..	..	..	..	..	..	4
Total number	1	..	5	2	1	1	1	..	..	..	11
Total of %..	9.1	..	45.4	18.2	9.1	9.1	9.1	..	..	..	100.0

DECLINE-DEPRESSION	DECREASE IN RATE										RAILS
11											
13	1	1	..	..	..	2	..	..	..	..	4
15											
17	..	1	..	..	..	..	..	..	..	..	1
Total number	1	2	..	..	..	2	..	..	..	..	5
Total of %..	20.0	40.0	..	..	..	40.0	..	..	..	..	100.0
SUMMARY											
Total number	12	8	9	12	12	8	6	2	3	..	72
Total of %..	16.7	11.1	12.5	16.7	16.7	11.1	8.3	2.8	4.1	..	100.0

Analysis of results: Time of discounting.—(a) Comparing the results shown in Tables H, I, and J for the three classes of announcements, the stock market gives the greatest amount of advance notice of the coming of the announcement in the class of dividend decreases. The summaries of the three tables mentioned may be analyzed from several points of view. It is seen, for example, that in the class of no change in dividend, in 88.8 per cent of the cases three months advance notice or

less is given; in the class of increase in dividend, in 48.6 per cent of the cases three months advance notice or less is given; in the class of decrease in dividend, in 40.3 per cent of the cases three months advance notice or less is given. Conversely, for the three classes, the following percentages represent the proportion of the cases in which *over three* months advance notice of the announcement is given: No change, 11.2 per cent; increase, 51.4 per cent; decrease, 59.7 per cent. Or, stated in another way, in the class of no change in dividend, evidences of discounting are most numerous in the column representing two months advance notice, with the column representing one month's notice a close second. In the class of increase in dividend, most of the announcements are discounted in the fourth month previous; in the classes of decrease in dividend, advance notice is shown equally in the first, the fourth and the fifth month previous. The average amount of notice, arrived at by weighting each of the monthly classes by the frequencies (items) in that class, for the three classes is:

No change in dividend	2.2 months
Increase in dividend	3.3 months
Decrease in dividend	4.1 months

(It must be kept in mind, however, that the foregoing statements refer only to the *advance notice* given *when a dividend is discounted*. It has no reference to the proportionate number of cases of discounting shown by the three classes of announcements discussed in Section A, this chapter.) For example, the class of *decreases* in dividend is discounted *least* effectively—in those cases of decrease which *are* discounted, a greater amount of advance notice is given than for the other two classes.

The outstanding difference is between the class of no change on the one hand, and the two classes comprising changes in dividend on the other. The reasons accounting for this difference can be adduced from the characteristics of stock-market news and the stock market itself. The news that a dividend is to be paid on stock which has paid no dividends for some time, or that the former rate will be increased, usually circulates in the market months before the actual announcement ma-

terializes. Rumors of the restoration of the Pennsylvania dividend to 6 per cent in 1922 were heard approximately four months or more prior to the meeting of the directors at which the action was taken. The information regarding the position of the company and the ability of the directors to increase the dividend was from fairly reliable sources. Any speculator knew that the probabilities were all in favor of restoring the dividend *some time* in the future. As to the exact dividend date on which the new rate would be declared, there could not be the same certainty. But fundamental conditions favored a higher rate on the stock, and it was not strange that the market anticipated the announcement several months in advance. The speculator cannot know exactly *when* a change will take place; he can simply indicate in stock prices his belief that the change is coming sometime in the future. The earlier he acts, that is, the farther ahead he discounts, the more profits he will make. On the other hand, it is observed that certain widely held regular dividend paying stocks often pick up their next dividend a short time after the last dividend. Discounting is more likely to be exercised *between* dividend periods with regular dividend paying stocks, because there is always present an element of chance—a possibility that the next dividend will be reduced. As the dividend period nears its close, and news concerning the particular corporation becomes known (interviews with directors, quarterly reports of earnings, etc.), discounting becomes operative. The director of one corporation will have no hesitation in predicting that the corporation's stock (which has not paid dividends for some time) will have the dividend restored *some time* in the future; the director of another corporation whose stock has been paying dividends will be reluctant to state that the next dividend, or that the dividends for the next two or three periods *will be* paid. It is not that the non-dividend payer is in better financial condition than the dividend payer; it is because in the case of the non-dividend payer the time is obviously ripe for such action; in the case of the dividend payer it would be foolhardy to venture a prediction that dividends will continue to be paid indefinitely, simply because the corporation has a good standing. Carried to its logical conclusion,

this would mean that dividends on standard stocks as United States Steel, American Car & Foundry, etc., are discounted years in advance. Dividends on dividend paying stocks must and do depend on current developments, for the very reason that they have come to be considered as standard investment stocks—the conservative policy of their executive officers.

For example, take the case of extra dividends. Financial reporters for newspapers and editorials appearing in financial news bulletins, speculate frequently, and at length, on the probabilities of the payment of an extra cash dividend out of the large cash reserves a particular corporation is piling up. The speculator has his mind made up concerning the payment of such a dividend—and because of the information to which he has access, he knows this ahead of the public. Just when the directors of the corporation will decide to make the extra cash disbursement is a matter of conjecture; knowing the condition of the corporation, general business conditions, and the policy in the past of this corporation, the forecast that *some time* this payment will be made is a fairly safe one. The conditions favoring such a disbursement are by their nature of long standing. It takes a period of months and even years to pile up a large cash surplus. On the other hand, continuation of the regular dividend depends largely on *current* conditions.

(*b*) Continuing the analysis of the results of the three tables from the standpoint of the kind of stock involved, Table K which follows below, shows that the greatest amount of advance notice of a dividend announcement is given for industrials. This may be gathered by a glance at the distribution of the items in the columns representing the number of months advance notice given. The half of the table showing the distribution for industrials presents the items spread over each of nine months; that showing the distribution for railroads, over seven months. Three months advance notice or less is given for industrials in 66.2 per cent of the total; for railroads, in 83.3 per cent of the total. Stated conversely, this means that industrials give over three months advance notice in 33.8 per cent of the cases, while railroads give over three months notice in only 16.7 per cent of the cases. The average amount of notice given by industrials, 2.9 months; by railroads, 2.4 months.

TABLE K

COMPARATIVE TABLE—NUMBER OF MONTHS THE STOCK MARKET DISCOUNTS IN ADVANCE

INDUSTRIALS

NATURE OF ANNOUNCEMENT	1	2	3	4	5	6	7	8	9	TOTAL
A. No change in dividend.....	64	73	53	19	6	..	..	..	..	215
B. Increase in dividend.....	28	28	14	43	23	10	3	3	1	153
C. Decrease in dividend.....	10	6	4	10	11	5	5	2	3	56
Total.....	102	107	71	72	40	15	8	5	4	424
Per cent.....	24.1	25.3	16.8	17.0	9.4	3.5	1.8	1.1	1.0	100.0

RAILROADS

NATURE OF ANNOUNCEMENT										
A. No change in dividend.....	59	54	55	14	6	..	..	..	..	188
B. Increase in dividend.....	9	5	6	6	4	2	1	..	..	33
C. Decrease in dividend.....	3	2	5	2	1	3	1	..	..	17
Total.....	71	61	66	22	11	5	2	..	..	238
Per cent.....	30.0	25.6	27.7	9.2	4.6	2.1	0.8	..	..	100.0

(*c*) Table L shows the extent to which the nature of general business conditions at the time of the announcement (improvement-boom or decline-depression) affects the amount of advance notice of a dividend given by the market. In periods of improvement-boom, three months advance notice or less is given in 79.2 per cent of the cases—in periods of decline-depression, three months notice or less is given in 61.0 per cent of the cases. This means that in periods of improvement-boom over three months notice is given in 20.8 per cent of the cases, or about one-fifth of the total. In periods of decline-depression, the same notice is given in 39.0 per cent of the cases, or almost two-fifths of the total. The average amount of notice: Improvement-boom, 2.5 months; decline-depression, 3.0 months.

TABLE L

COMPARATIVE TABLE—NUMBER OF MONTHS THE STOCK MARKET DISCOUNTS IN ADVANCE

IMPROVEMENT-BOOM

NATURE OF ANNOUNCEMENT	1	2	3	4	5	6	7	8	9	TOTAL
A. No change in dividend.....	87	93	89	26	10	..	..	..	..	305
B. Increase in dividend.....	16	17	8	14	13	5	2	1	1	77
C. Decrease in dividend.....	3	3	7	6	4	2	1	..	..	26
Total.....	106	113	104	46	27	7	3	1	1	408
Per cent.....	26.0	27.7	25.5	11.3	6.7	1.7	0.7	0.2	0.2	100.0

DECLINE-DEPRESSION

NATURE OF ANNOUNCEMENT										
A. No change in dividend.....	36	34	19	7	2	..	..	..	..	98
B. Increase in dividend.....	21	16	12	35	14	7	2	2	..	109
C. Decrease in dividend.....	10	5	2	6	8	6	5	2	3	47
Total.....	67	55	33	48	24	13	7	4	3	254
Per cent.....	26.3	21.7	13.0	18.9	9.4	5.1	2.8	1.6	1.2	100.0

CHAPTER III

THE DISCOUNTING OF STOCK DIVIDENDS AND PRIVILEGED SUBSCRIPTIONS

A. THE DEGREE OF DISCOUNTING EFFICIENCY.

Introductory: General method of analysis.—In order to make an examination into the capacity of the stock market to discount stock dividends and privileged subscriptions, or "rights," the same general methods are followed as in the case of cash dividends. Again, as described in the first part of this study, the announcements are taken from a daily news bulletin service.[1] From this source have been secured announcements of 140 stock dividends and "rights," covering the same period of time as the investigation of cash dividends, 1904–1922. Announcements of this type are not nearly as numerous as those of cash dividends and because of their nature, appear only sporadically, principally during periods of business prosperity. However, when they are made, they are of importance to investor and speculator, and have been included as part of the subject matter of this study.

The stocks represented by these announcements are (or were) listed on the following exchanges: New York Stock Exchange, 64; New York Curb Market, 19; Boston Stock Exchange, 6; Chicago Stock Exchange, 4; Baltimore Stock Exchange, 2; Philadelphia Stock Exchange, 2; Pittsburgh Stock Exchange, 1.[2]

The prices for the stocks concerned are taken from the *Wall Street Journal* and the *Commercial and Financial Chronicle*. As in the former investigation, the price behavior of each stock is analyzed separately, compared with the price trend of similar stocks. The same tests of discounting are used; and Method 2, the system of checking the results of Method 1 is used to check the results shown by Method 1 as explained previously.

Summary of results: The degree of discounting efficiency of the stock market.—The results of the investigation are summarized in the same manner as the results for cash dividends. Table M represents these results:

---

[1] Philadelphia News Bureau.

[2] See Appendix C for list of stocks in which "rights" or stock dividends were declared.

TABLE M.—DEGREE OF DISCOUNTING EFFECTIVENESS—STOCK DIVIDENDS AND RIGHTS

Accuracy of Discounting (Per Cent)
WITHIN

Sub-Period	⅛ OF 1		⅛—½		½—1		1—2		2—5		5 AND OVER		CUMULATIVE		
	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.		D.A.	B.D.
IMP.-BOOM													(55 Items)	IND	UST.
1	1	3	1	0	1	0	0	0	0	0	0	0	Within ⅛ of 1%	54.6	58.2
3	3	2	0	1	0	0	0	0	0	0	0	0	Within ¼ of 1%	58.2	67.0
5	4	5	1	0	0	1	0	0	1	0	0	0	Within 1%	65.5	65.5
7	3	2	0	0	0	1	1	1	2	2	0	0	Within 2%	76.4	72.8
9	19	20	0	0	3	1	5	3	9	5	1	8	Within 5%	98.2	85.5
Total number	30	32	2	1	4	3	6	4	12	7	1	8			
Percentage of total	54.6	58.2	3.6	1.8	7.3	5.5	10.9	7.3	21.8	12.7	1.8	14.5			
DEC.-DEP.													(60 Items)	INDUSTRIALS	
2	1	0	0	0	0	1	0	0	0	0	0	0	Within ⅛ of 1%	46.7	53.3
4	4	5	0	0	1	1	0	0	2	1	1	1	Within ¼ of 1%	46.7	53.3
6	3	3	0	0	1	0	0	0	1	1	0	1	Within 1%	56.7	58.3
8	20	24	0	0	4	1	8	6	10	11	4	4	Within 2%	70.0	68.3
													Within 5%	91.7	90.0
Total number	28	32	0	0	6	3	8	6	13	13	5	6			
Percentage of total	46.7	53.3	..	..	10.0	5.0	13.3	10.0	21.7	21.7	8.3	10.0			
IMP.-BOOM													(8 Items)	RAILS	
10	2	2	0	1	0	0	0	0	2	1	0	0	Within ⅛ of 1%	62.5	50.0
12	3	2	0	0	0	2	1	0	0	0	0	0	Within ¼ of 1%	62.5	62.5
14	..	..	..	..	..	..	..	..	..	..	..	..	Within 1%	62.5	87.5
16	..	..	..	..	..	..	..	..	..	..	..	..	Within 2%	75.0	87.5
													Within 5%	100.0	100.0
Total number	5	4	0	1	0	2	1	0	2	1	0	0			
Percentage of total	62.5	50.0	..	12.5	..	25.0	12.5	..	25.0	12.5	..	..			

TABLE M.—DEGREE OF DISCOUNTING EFFECTIVENESS—STOCK DIVIDENDS AND RIGHTS—*Continued*

Sub-Period.....	WITHIN ⅓ OF 1		⅓—½		½—1		1—2		2—5		5 AND OVER		CUMULATIVE		
	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.		D.A.	B.D.
DEC.-DEP.											(17 Items)		RAILS		
11.....	7	7	0	0	1	0	3	3	0	1	0	0	Within ⅓ of 1%.....	70.6	64.7
13.....	4	4	0	0	0	0	0	0	0	0	1	1	Within ½ of 1%.....	70.6	64.7
15.....	1	0	0	0	0	0	0	1	0	0	0	0	Within 1%.....	76.5	64.7
17.....	..	..	..	..	..	..	..	..	..	..	..	..	Within 2%.....	94.1	88.2
												..	Within 5%.....	94.1	94.1
Total number....	12	11	0	0	1	0	3	4	0	1	1	1			
Percentage of total	70.6	64.7	..	..	5.9	..	17.6	23.5	..	5.9	5.9	5.9			
ALL	STOCK DIVIDENDS AND RIGHTS (140 Items)														
Total number....	75	79	2	2	11	8	18	14	27	22	7	15	Within ⅓ of 1%.....	53.6	56.5
Percentage of total	53.6	56.5	1.4	1.4	7.9	5.7	12.8	10.0	19.3	15.7	5.0	10.7	Within ½ of 1%.....	55.0	57.9
													Within 1%.....	62.9	63.6
													Within 2%.....	75.7	73.6
													Within 5%.....	95.0	89.3

LEGEND

IMP.-BOOM = Improvement-Boom Periods (see p. 25). DEC.-DEP. = Decline-Depression Periods (see p. 25). SUB-PERIOD = of cycles listed on p. 25. D.A. = Results of day of dividend announcement. B.D. = Results for both days combined (day of announcement and day after announcement). IND. = Industrial stocks. RAILS = Railroad stocks.

(*a*) The announcements of "rights" and stock dividends are effectively discounted (within 1 per cent accuracy) in slightly less than two-thirds of the total number of cases. On the day of the announcement the results show discounting in 62.9 per cent of the cases; for both days combined, in 63.6 per cent of the cases.[3] If the results are analyzed with 2 per cent accuracy as the standard, the announcements are discounted in approximately three-quarters of the cases—75.7 per cent on the day of the announcement, 73.6 per cent for the two days combined.

As in the case of cash dividends, this investigation of the discounting efficiency of the stock market is fair only when the relative failure of the market to discount in the remaining one-third of the cases (using 1 per cent accuracy as the test) is compared with the amounts of stock increase involved in the announcements. While the recipient of the stock dividend or "right" at the moment possesses no greater share in the property of the corporation than he did before the distribution, he does have a right to future dividends on the new stock if earned. This right to future earnings is in many cases very valuable, and none the less so because it constitutes a right to future, not present earnings. If the announcement is that a 100 per cent stock dividend is to be disbursed, and if the corporation has been capitalized conservatively and has been showing a large excess of earnings over dividend requirements, the announcement may mean that the same cash dividend rate will be maintained in the future on double the number of shares of stock. The announcement potentially indicates a doubling of dividend income to the stockholder. If the stock market fails to discount such an announcement within 1 per cent accuracy, such failure of discounting is slight compared to the size of the increase of potential dividend income. Table N, which follows, indicates the ranges of increase in stock ownership compared with the figures showing the relative effectiveness of discounting by the market.

---

[3] The results of this part of the investigation are approximately the same as those of Mears whose work is referred to in Part I of this study. Mears' conclusions are that discounting is shown in 60.0 per cent of his total number of cases, 91. If to the 60 per cent are added those cases in which the changes (increases) in price after the announcement were "unimportant" (expression is that of Mears), the percentage of cases showing discounting is 71.0. These results agree substantially with those given above.

TABLE N

COMPARATIVE TABLE—EFFECTIVENESS OF DISCOUNTING AND RANGES OF STOCK OWNERSHIP INCREASE

ACCURACY OF DISCOUNTING (PER CENT) WITHIN	EFFECTIVENESS OF DISCOUNTING				RANGES OF STOCK INCREASE	
	D.A.		B.D.			
	NUMBER	PER CENT	NUMBER	PER CENT	LOW	HIGH
⅓ of 1	75	53.6	79	56.5	1.5	900.0
⅓—½	2	1.4	2	1.4	2.0	100.0
½—1	11	7.9	8	5.7	20.0	75.0
1—2	18	12.8	14	10.0	2.0	300.0
2—5	27	19.3	22	15.7	6.0	400.0
5 and over[4]	7	5.0	15	10.7	2.5	138.0
Total	140	100.0	140	100.0		

It will be seen that, as in the case of cash dividend announcements, the size of the increase in stock ownership bears no apparent relationship to the relative ability of the market to forecast. At the same time, it is apparent that the failure of the market to discount by 5 per cent or more in 10.7 per cent of the cases is relatively slight, as the increases in stock ownership announced are as high as 138 per cent.

(*b*) Table O presents the results analyzed from the viewpoint of the class of stock—industrials or railroads. Railroads make considerably the better showing whether the results for the day of the announcement or for both days combined be taken. There is little doubt that this is because railroads were considered superior as investment securities during the early part of the period covered by this investigation, added to the fact that railroad accounting has been standardized, making information relative to railroads more accessible to the public

[4] A separate analysis of each item in this group shows that in all but three cases, the percentage of deviation from perfect discounting is more than compensated by the amount of increase in stock ownership. These three cases are all stocks with a very narrow market, and are inactive.

than that pertaining to industrials. During the latter part o this period announcements of rights and stock dividends by railroads have been exceedingly rare. This explains the relative scarcity of railroad items compared with industrials. The recent plethora of stock dividends (1920–1922) has been disbursed almost exclusively by industrial corporations.

TABLE O
COMPARATIVE TABLE—EFFECTIVENESS OF DISCOUNTING
(WITHIN 1 PER CENT ACCURACY)

INDUSTRIALS (115)				RAILROADS (25)			
CASES SHOWING		DISCOUNTING		CASES SHOWING		DISCOUNTING	
NUMBER		PER CENT		NUMBER		PER CENT	
D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.
70	71	61.7	62.6	18	18	72.0	72.0

(*c*) Table P presents the results classified according to whether the announcement occurred in improvement-boom or decline-depression. As with cash dividends, the stock market forecasts most accurately during the period of improvement-boom. The differences shown between the two periods, however, are not great. The market can be relied on to forecast approximately two-thirds of the time.

TABLE P
COMPARATIVE TABLE—EFFECTIVENESS OF DISCOUNTING
(WITHIN 1 PER CENT ACCURACY)

IMPROVEMENT-BOOM (63)				DECLINE-DEPRESSION (77)			
NUMBER		PER CENT		NUMBER		PER CENT	
D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.
41	43	65.1	68.2	47	46	61.0	60.0

B. The Time of Discounting.

Summary of results.—(*a*) Advance notice of announcements of stock dividends and rights is given as far as nine months ahead. It will be seen in Table Q, which follows, that such ample notice is given not only in a few cases, but in 14.5 per cent of the total, or about one-seventh of the time. The distribution of the items is spread quite evenly over the entire nine columns representing advance notice of from one to nine months. In 70.4 per cent of the total, more than three months advance notice is given by the stock market—in only 29.6 per cent of the total is advance notice of three months or less given. The average amount of notice, computed by weighting each of the months by the frequencies of that month, is 4.9 months, or practically five months.

Table Q

NUMBER OF MONTHS STOCK MARKET INDICATES ANNOUNCEMENTS IN ADVANCE

IMP.-BOOM										INDUSTRIAL
Sub-Period....	1	2	3	4	5	6	7	8	9	TOTAL
1	..	2	..	1	..	..	..	..	..	3
3	..	..	1	..	..	1	..	..	1	3
5	1	..	1	1	..	1	1	..	1	6
7	..	1	..	1	..	..	..	..	..	2
9	..	3	7	4	2	2	1	2	..	21
Number.....	1	6	9	7	2	4	2	2	2	35
Per cent.....	2.9	17.2	25.7	20.0	5.7	11.4	5.7	5.7	5.7	100.0

IMP.-BOOM										RAILROADS
10	..	..	..	..	2	..	..	..	1	3
12	1	..	..	2	..	1	..	..	..	4
14										
16										
Number.....	1	0	0	2	2	1	0	0	1	7
Per cent.....	14.3	..	..	28.6	28.6	14.3	..	..	14.3	100.1

TABLE Q—*Continued*

DEC.-DEP.										INDUSTRIALS
2	..	1	..	..	..	..	..	..	..	1
4	..	1	..	1	..	1	..	..	3	6
6	..	..	..	1	1	1	..	..	..	3
8	3	1	2	3	4	4	1	2	5	25
Number.....	3	3	2	5	5	6	1	2	8	35
Per cent.....	8.5	8.5	5.7	14.3	14.3	17.2	2.9	5.7	22.9	100.0

DEC.-DEP.										RAILROADS
11	..	..	..	..	1	2	2	..	2	7
13	..	..	1	..	..	2	1	..	..	4
15										
17										
Number.....	..	..	1	..	1	4	3	..	2	11
Per cent.....	..	..	9.1	..	9.1	36.4	27.3	..	18.1	100.0
ALL ANNOUNCEMENTS										
Number.....	5	9	12	14	10	15	6	4	13	88
Per cent.....	5.7	10.3	13.6	16.0	11.4	17.1	6.8	4.6	4.51	100.0

(*b*) Table R, classifying the results according to industrials and railroads, indicates that the announcements by railroads are forecast farthest ahead. More than three months advance notice is given in 89.0 per cent of the total—three months or less in only 11.0 per cent of the total. Industrials are discounted by more than three months in 65.7 per cent of the total—three months or less in 34.3 per cent of the total. The average notice, calculated as explained above, is 4.9 months for industrials; for railroads, 5.8 months.

TABLE R

COMPARATIVE TABLE—NUMBER OF MONTHS STOCK MARKET INDICATES ANNOUNCEMENTS IN ADVANCE

	INDUSTRIALS									
	1	2	3	4	5	6	7	8	9	TOTAL
Number.....	4	9	11	12	7	10	3	4	10	70
Per cent.....	5.7	12.9	15.7	17.2	10.0	14.3	4.2	5.7	14.3	100.0

TABLE R—*Continued*

RAILROADS

Number	1	..	1	2	3	5	3	..	3	18
Per cent	5.5	..	5.5	11.1	16.7	27.8	16.7	..	16.7	100.0

(*c*) Announcements are discounted farthest ahead in periods of decline-depression. Table S below shows the following comparative results: Over three months advance notice for periods of improvement-boom, 59.5 per cent of the total; for periods of decline-depression, 80.5 per cent of the total. The average amount of notice: Improvement-boom, 4.4 months; decline-depression, 5.7 months.

TABLE S

COMPARATIVE TABLE—NUMBER OF MONTHS STOCK MARKET INDICATES ANNOUNCEMENTS IN ADVANCE

IMPROVEMENT-BOOM

	1	2	3	4	5	6	7	8	9	TOTAL
Number	2	6	9	9	4	5	2	2	3	42
Per cent	4.8	14.3	21.4	21.4	9.5	11.9	4.8	4.8	7.1	100.0

DECLINE-DEPRESSION

Number	3	3	3	5	6	10	4	2	10	46
Per cent	6.5	6.5	6.5	10.9	13.1	21.8	8.6	4.3	21.8	100.0

Chapter IV

RESUME

At this point a resumé of the conclusions arrived at in this study is fitting, as the results of the analysis of the data are scattered throughout the preceding pages; and since the data for cash dividends, and that for stock dividends and rights have been analyzed in the same manner, it is of interest to compare the respective results.

The following summaries serve two purposes: First, they indicate similarities and differences between the results for the two sets of data, and second, they emphasize the remarkable degree of accuracy of discounting shown by the stock market.

EFFECTIVENESS OF DISCOUNTING (Both days combined: Accuracy, 1%)	CASH DIVIDENDS PER CENT	STOCK DIVIDENDS AND RIGHTS PER CENT
No change in rate	82.8	
Increase in rate	66.0	63.6
Decrease in rate	46.0	
All industrials	67.2	62.6
All railroads	76.9	72.0
All stocks: Improvement-boom	62.0	68.2
All stocks: Decline-depression	64.2	60.0

EFFECTIVENESS OF DISCOUNTING (Both days combined: Accuracy, 2%)	CASH DIVIDENDS PER CENT	STOCK DIVIDENDS AND RIGHTS PER CENT
No change in rate	92.4	
Increase in rate	80.3	73.6
Decrease in rate	54.5	
All industrials	79.6	70.4
All railroads	87.4	88.0
All stocks: Improvement-boom	84.8	74.6
All stocks: Decline-depression	74.1	78.0

In comparing the results indicated above, the strictness of the standard to determine accuracy of discounting must never be lost sight of. Even a standard of 2 per cent accuracy (*i. e.*, considering as not discounted all dividend announcements of stocks whose prices varied over 2 per cent from the general market) cannot be considered other than a stringent test. Yet a glance at the summary for cash dividends (2 per cent accuracy) above shows that for 8 out of every 10 announcements of industrials, and for almost 9 out of every 10 rails, discounting is an *absolute* fact. The results for rights and stock dividends are almost identical; the proportions being respectively, 7 out of 10, and nearly 9 out of 10. This does not mean to say that in the case of cash dividends on industrials, for example, that the market fails to discount the announcement even in the remaining 2 cases out of 10. Neither in the case of cash dividends on rails, does the market fail in the remaining 1 case out of 10. Only in an *absolute and arbitrary* sense, can it be said that the remaining cases show failure to discount. *Relatively* (that is, judged by the amounts of the percentage of dividend increase or decrease indicated by the announcements), it has been shown, that with comparatively few exceptions, *every announcement has been discounted.* And from the viewpoint of investor and speculator, the only fair test of the stock market's ability to discount is the *relative*, not the absolute test.

APPROXIMATE AMOUNT OF ADVANCE NOTICE	CASH DIVIDENDS	STOCK DIVIDENDS AND RIGHTS
	MONTHS	MONTHS
No change in rate	2.2	
Increase in rate	3.3	4.9
Decrease in rate	4.1	
All industrials	2.9	4.9
All railroads	2.4	5.8
All stocks: Improvement-boom	2.5	4.4
All stocks: Decline-depression	3.0	5.7

The striking characteristic of the foregoing table is the appreciably greater amount of notice given in the case of announcements of rights and stock dividends. This is due to their much more spectacular nature and the wide publicity attendant on their announcement and issue. But valuable as is the advance notice given in the case of rights and stock dividends, such announcements are comparatively rare; and by far the greater service is rendered by the stock in discounting announcements of cash dividends. It is truly remarkable that over a period of nineteen years, and including common stocks of every variety, the average amount of advance notice given by the market for this class of announcements is almost three months for all industrials, and almost two and a half months for all railroads.

If the organized stock market were capable of exercising no other function save that of discounting, its record of performance of this single function would be more than ample to justify its existence and to entitle it to high rank as a useful business institution.

Appendix A

STOCKS ANNOUNCING CASH DIVIDENDS (Chapter II)

(Listed on New York Stock Exchange unless indicated otherwise)

Rails	*Industrials*
A	A
Atchison, T., & S. Fe	Adams Express
Atlantic C. Line	Advance Rumely
	Ajax Rubber
	Allied Chemical
	Allis Chalmers
	Amal. Copper
	Amer. Ag. Chem.
	Amer. Beet Sugar
	Amer. Brake Shoe & Foundry
	Amer. Car & Foundry
	Amer. Cotton Oil
	American Express
	Amer. Gas & Elec. (Curb)
	Amer. Ice
	Amer. Int. Corp.
	Amer. Light & Traction (Curb)
	Amer. Linseed
	Amer. Loco.
	Amer. Ship.
	Amer. Sm. & Ref.
	Amer. Snuff
	Amer. Steel Foundry
	Amer. Sugar
	Amer. Sumatra Tob.
	Amer. Tel. & Tel.
	Amer. Tobacco
	Amer. Woolen
	Amer. Zinc, L., & S.
	Anaconda Copper
	Atlantic G. & W. I.
B	B
B. & O.	Bethlehem Steel
Boston & Me. (Bo.)	Butte & Superior
C	C
Canadian Pacific	California Pet.
Canada Southern	Calumet & Arizona (Curb)
C., C., C., & St. Louis	Calumet & Hecla (Bo.)
Central of N. J.	Cambria Steel (Phila.)
Chesapeake & Ohio	Central Leather
Chicago, B., & Q.	Cerro de Pasco Sugar
Chic., M. & St. Paul	Chandler Motor
Chic. & Northwestern	Chino Copper
Col. & So.	Cluett Peabody
	Coca Cola
	Colorado Fuel & Iron

Rails	*Industrials*
	Columbia Graph.
	Columbus Gas & Elec.
	Cons. Gas
	Cont. Can.
	Copper Range (Bo.)
	Corn Prod.
	Crucible Steel
	Cuba Cane Sugar
D	D
D., L. & W.	Diamond Match (Chic.)
D. & H.	Distillers Securities
E	E
	Endicott Johnson
F	F
	Fisk Rubber
	Fed. Mining & Sm.
G	G
	General Electric
	General Motors
	Goodrich Tire & Rubber
	Goodyear T. & R. (Curb)
	Greene Cananea Copper
	Gulf States Steel (Curb)
H	H
Hocking Valley	Hupp Motor (Curb)
I	I
Illinois Central	International Agr. Corp.
Interboro	International Harvester
	International Nickel
	Int. Merc. Marine (Curb)
	Int. Paper
	Int. Steam Pump
	Inspiration Copper
J	J
	Jewel Tea
K	K
	Kelly Springfield
	Kennecott Copper
	Keystone Tire & Rubber
L	L
L. & N.	Lackawanna Steel
Lehigh Valley (Phila.)	Liggett & Meyers
	Lorillard, P.

Rails	*Industrials*
M	M
Manhattan S. Rwy.	Maxwell Motors
Mich. Central	Mergenthaler (Bo.)
Mo., K., & T.	Mex. Pet.
Mo. Pac.	Miami Copper
	Midvale Steel & Ord.
N	N
Nashville, C., & St. L.	National Biscuit
New York, C., & St. L.	Nat. Cloak & Suit
New York Central	Nat. Enameling & Stamp.
New York, N. H. & H.	Nat. Lead
Norfolk & Southern	Nevada Cons. Copper
Norfolk & Western	N. Y. Air Brake
Northern Pacific	N. Y. Dock
O	O
	Otis Elevator
P	P
Pacific Coast	Pac. Gas & Elec. (Curb)
Pennsylvania	Pacific Oil
Pere Marquette	Pan Amer. Pet.
Phila. R. T.	Peoples Gas
Pittsburgh, C., C. & St. L.	Pittsburgh Brewing (Pitts.)
	Pressed Steel Car
	Pullman
	Punta Alegre Sugar
Q	Q
	Quaker Oats (Chic.)
R	R
Reading	Ray Cons. Copper
Rock Island	Railway St. Spring
	Republic Iron & Steel
S	S
Soo Line	Savage Arms
Southern Pac.	Saxon Motors
Southern Rwy.	Sears Roebuck (Chicago)
	Sloss Sheffield
	Southern Porto Rico Sugar
	Standard Oil of Ind. (Curb)
	Standard Oil of N. Y. (Curb)
	Stewart Warner
	Stromberg Cork
	Studebaker
	Stutz Motor
	Superior Steel
	Swift & Co. (Chic.)
T	T
	Tenn. Coal & I.

Rails	*Industrials*
U	U
Union Pac.	Underwood T. W. Union Bag & Paper United Cigar Stores United Drug United Fruit (Bo.) United Gas Imp. (Phila.) United Pr. Sh. (Curb) United Retail Stores United Shoe Mach. (Bo.) United Verde C. (Bo.) U. S. Cast Iron Pipe & Fdy. U. S. Food Products U. S. Ind. Alcohol U. S. Realty & Impt. U. S. Rubber U. S. Smelt., R., & M. U. S. Steel Utah Cons. Copper (Bo.)
V	V
	Va. Car. Chem. Vanadium Steel Vivadou
W	W
Wabash	Westinghouse Elec. Western Union White Motor (Curb) Wickwire Spencer Steel Willys Overland Woolworth

Appendix B

CASH DIVIDENDS

Original items: Classified according to degree of discounting effectiveness.

NO CHANGE IMP.-BOOM IND.

1. January 1, 1904 to January 19, 1906

Percentage of Accuracy within

	⅓ of 1		⅓—½		½—1		1—2		2—5		5 and over	
Item	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.
1	..	1	..	..	..	..	..	..	1	..	..	..
2	1	1	..	..	..	..	..	..	..	..	..	..
3	1	1	..	..	..	..	..	..	..	..	..	..
4	..	..	..	..	1	1	..	..	..	..	..	..
5	..	..	..	..	..	..	1	1	..	..	..	..
6	..	1	..	..	1	..	..	..	..	..	..	..
7	1	1	..	..	..	..	..	..	..	..	..	..
8	..	1	1	..	..	..	..	..	..	..	..	..
9	1	1	..	..	..	..	..	..	..	..	..	..
10	1	1	..	..	..	..	..	..	..	..	..	..
11	..	1	..	..	..	..	..	..	1	..	..	..
12	1	..	..	..	..	..	..	..	..	1	..	..
13	1	1	..	..	..	..	..	..	..	..	..	..
14	1	..	..	1	..	..	..	..	..	..	..	..
15	1	1	..	..	..	..	..	..	..	..	..	..
16	1	1	..	..	..	..	..	..	..	..	..	..
17	1	1	..	..	..	..	..	..	..	..	..	..
18	1	1	..	..	..	..	..	..	..	..	..	..
19	..	..	..	..	..	..	1	1	..	..	..	..
20	1	1	..	..	..	..	..	..	..	..	..	..
21	..	1	..	..	..	..	1	..	..	..	..	..
22	1	1	..	..	..	..	..	..	..	..	..	..
23	1	1	..	..	..	..	..	..	..	..	..	..
24	1	1	..	..	..	..	..	..	..	..	..	..
25	1	1	..	..	..	..	..	..	..	..	..	..
26	..	..	..	..	1	..	..	1	..	..	..	..
27	1	1	..	..	..	..	..	..	..	..	..	..
28	..	1	..	..	..	..	1	..	..	..	..	..
29	1	..	..	..	..	1	..	..	..	..	..	..
30	..	1	..	..	1	..	..	..	..	..	..	..
31	1	1	..	..	..	..	..	..	..	..	..	..
32	1	1	..	..	..	..	..	..	..	..	..	..
33	..	1	..	..	1	..	..	..	..	..	..	..
34	1	1	..	..	..	..	..	..	..	..	..	.

PERCENTAGE OF ACCURACY WITHIN

	⅓ OF 1		⅓—½		½—1		1—2		2—5		5 AND OVER	
ITEM	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.
35	..	..	..	..	1	..	..	1	..	..	..	..
36	1	1	..	..	..	..	..	..	..	..	..	..
37	..	..	..	..	..	..	1	..	..	1	..	..
38	1	1	..	..	..	..	..	..	..	..	..	..
39	1	1	..	..	..	..	..	..	..	..	..	..
40	..	..	..	..	..	..	..	..	1	1	..	..
41	1	1	..	..	..	..	..	..	..	..	..	..
42	1	1	..	..	..	..	..	..	..	..	..	..
43	1	1	..	..	..	..	..	..	..	..	..	..
44	..	..	..	1	..	..	..	..	1	..	..	..
45	1	1	..	..	..	..	..	..	..	..	..	..
46	..	1	..	..	1	..	..	..	..	..	..	..
47	1	1	..	..	..	..	..	..	..	..	..	..
48	1	1	..	..	..	..	..	..	..	..	..	..
49	1	1	..	..	..	..	..	..	..	..	..	..
50	..	..	..	..	..	..	1	1	..	..	..	..
51	1	..	..	..	..	1	..	..	..	..	..	..
52	1	1	..	..	..	..	..	..	..	..	..	..
53	1	1	..	..	..	..	..	..	..	..	..	..
54	1	1	..	..	..	..	..	..	..	..	..	..
55	..	1	..	..	..	..	1	..	..	..	..	..
56	1	1	..	..	..	..	..	..	..	..	..	..
57	..	..	..	..	..	..	..	..	1	1	..	..
	37	43	1	2	7	3	7	5	5	4	0	0

3. November 16, 1907 to November 19, 1909

146	1	1	..	..	..	..	..	..	..	..	..	..
147	1	1	..	..	..	..	..	..	..	..	..	..
148	..	..	..	..	..	..	..	..	..	..	1	1
149	..	..	..	..	..	..	1	..	..	1	..	..
150	1	1	..	..	..	..	..	..	..	..	..	..
151	..	..	..	..	..	..	..	..	1	1	..	..
152	1	1	..	..	..	..	..	..	..	..	..	..
153	..	..	..	..	..	1	1	..	..	..	..	..
154	..	1	..	..	..	..	1	..	..	..	..	..
155	..	..	..	..	..	..	1	..	..	1	..	..
156	1	1	..	..	..	..	..	..	..	..	..	..
157	1	1	..	..	..	..	..	..	..	..	..	..
158	1	1	..	..	..	..	..	..	..	..	..	..
159	..	..	..	..	..	..	..	..	..	..	1	1
160	..	..	..	..	..	..	..	..	..	..	1	1
161	..	..	..	1	1	..	..	..	..	..	..	..
162	..	..	..	..	..	..	..	..	1	..	..	1

PERCENTAGE OF ACCURACY
WITHIN

	⅓ OF 1		⅓—½		½—1		1—2		2—5		5 AND OVER	
ITEM	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.
163	1	1	..	..	..	..	..	..	..	..	..	..
164	..	..	..	1	1	..	..	..	..	..	..	..
165	..	..	..	..	..	..	1	1	..	..	..	..
166	1	1	..	..	..	..	..	..	..	..	..	..
167	1	1	..	..	..	..	..	..	..	..	..	..
168	1	1	..	..	..	..	..	..	..	..	..	..
169	1	1	..	..	..	..	..	..	..	..	..	..
170	..	..	..	..	1	..	..	1	..	..	..	..
171	..	..	..	..	..	..	..	1	1	..	..	..
172	1	1	..	..	..	..	..	..	..	..	..	..
173	..	..	..	..	..	1	..	..	1	..	..	..
174	..	..	..	..	..	..	..	..	..	..	1	1
175	..	..	1	..	..	1	..	..	..	..	..	..
176	1	1	..	..	..	..	..	..	..	..	..	..
177	1	..	..	1	..	..	..	..	..	..	..	..
178	1	1	..	..	..	..	..	..	..	..	..	..
179	1	1	..	..	..	..	..	..	..	..	..	..
180	..	..	..	..	..	1	1	..	..	..	..	..
181	1	1	..	..	..	..	..	..	..	..	..	..
182	1	1	..	..	..	..	..	..	..	..	..	..
183	1	..	..	..	..	..	..	..	..	1	..	..
184	1	..	..	..	..	1	..	..	..	..	..	..
185	1	1	..	..	..	..	..	..	..	..	..	..
186	1	1	..	..	..	..	..	..	..	..	..	..
187	1	1	..	..	..	..	..	..	..	..	..	..
188	1	1	..	..	..	..	..	..	..	..	..	..
189	1	1	..	..	..	..	..	..	..	..	..	..
190	1	..	..	..	..	..	..	..	..	1	..	..
191	1	..	..	..	..	..	..	1	..	..	..	..
192	1	1	..	..	..	..	..	..	..	..	..	..
193	1	1	..	..	..	..	..	..	..	..	..	..
194	1	1	..	..	..	..	..	..	..	..	..	..
195	1	1	..	..	..	..	..	..	..	..	..	..
196	1	..	..	1	..	..	..	..	..	..	..	..
197	1	1	..	..	..	..	..	..	..	..	..	..
198	1	1	..	..	..	..	..	..	..	..	..	..
199	1	..	..	..	..	..	..	1	..	..	..	..
200	..	..	1	1	..	..	..	..	..	..	..	..
201	1	1	..	..	..	..	..	..	..	..	..	..
202	1	..	..	1	..	..	..	..	..	..	..	..
203	1	1	..	..	..	..	..	..	..	..	..	..
204	1	..	..	..	..	1	..	..	..	..	..	..
205	1	1	..	..	..	..	..	..	..	..	..	..
206	1	1	..	..	..	..	..	..	..	..	..	..
207	1	1	..	..	..	..	..	..	..	..	..	..
208	1	1	..	..	..	..	..	..	..	..	..	..
209	..	1	..	..	..	..	1	..	..	..	..	..
210	1	1	..	..	..	..	..	..	..	..	..	..
211	..	1	..	..	1	..	..	..	..	..	..	..
212	..	..	1	1	..		..	..	..	..	..	..
	45	39	3	7	4	6	7	5	4	5	4	5

5. December 24, 1914 to November 21, 1916

	PERCENTAGE OF ACCURACY WITHIN											
	⅓ OF 1		⅓—½		½—1		1 OF 2		2—5		5 AND OVER	
ITEM	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.
321	1	1	..	..	..	..	..	..	..	..	..	..
322	1	1	..	..	..	..	..	..	..	..	..	..
323	1	..	..	..	..	..	..	1	..	..	..	..
324	..	..	..	..	..	..	1	1	..	..	..	..
325	..	..	..	..	..	..	1	1	..	..	..	..
326	..	1	..	..	..	..	1	..	..	..	..	..
327	..	..	..	..	..	1	1	..	..	..	..	..
328	1	1	..	..	..	..	..	..	..	..	..	..
329	1	1	..	..	..	..	..	..	..	..	..	..
330	..	1	1	..	..	..	..	..	..	..	..	..
331	..	..	..	..	1	1	..	..	..	..	..	..
332	1	1	..	..	..	..	..	..	..	..	..	..
333	1	..	..	..	..	..	..	1	..	..	..	..
334	1	1	..	..	..	..	..	..	..	..	..	..
335	1	..	..	..	..	..	..	..	..	1	..	..
336	1	1	..	..	..	..	..	..	..	..	..	..
337	1	1	..	..	..	..	..	..	..	..	..	..
338	1	1	..	..	..	..	..	..	..	..	..	..
339	..	..	..	..	..	..	..	..	1	1	..	..
340	1	1	..	..	..	..	..	..	..	..	..	..
341	..	1	..	..	1	..	..	..	..	..	..	..
342	1	1	..	..	..	..	..	..	..	..	..	..
343	..	..	..	1	..	..	1	..	..	..	..	..
	14	14	1	1	2	2	5	4	1	2		

7. December 19, 1917 to November 3, 1919

401	..	..	..	..	..	..	1	1	..	..	..	..
402	1	1	..	..	..	..	..	..	..	..	..	..
403	..	..	1	1	..	..	..	..	..	..	..	..
404	1	..	..	..	..	..	..	..	..	1	..	..
405	1	..	..	..	..	..	..	1	..	..	..	..
406	1	1	..	..	..	..	..	..	..	..	..	..
407	1	..	..	1	..	..	..	..	..	..	..	..
408	1	..	..	1	..	..	..	..	..	..	..	..
409	1	1	..	..	..	..	..	..	..	..	..	..
410	1	1	..	..	..	..	..	..	..	..	..	..
411	1	1	..	..	..	..	..	..	..	..	..	..
412	1	1	..	..	..	..	..	..	..	..	..	..
413	..	1	..	..	..	..	1	..	..	..	..	..
414	..	..	..	..	1	..	..	..	..	1	..	..
415	1	1	..	..	..	..	..	..	..	..	..	..
416	..	..	..	..	..	..	1	1	..	..	..	..

PERCENTAGE OF ACCURACY WITHIN

	⅓ OF 1		⅓—½		½—1		1—2		2—5		5 AND OVER	
ITEM	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.
417	..	..	..	..	..	1	1	..	..	..	..	..
418	..	..	..	..	..	..	1	1	..	..	..	..
419	1	1	..	..	..	..	..	..	..	..	..	..
420	1	1	..	..	..	..	..	..	..	..	..	..
422	..	1	..	..	1	..	..	..	..	..	..	..
423	1	..	..	..	..	1	..	..	..	..	..	..
424	1	1	..	..	..	..	..	..	..	..	..	..
501	..	1	..	..	1	..	..	..	..	..	..	..
502	1	1	..	..	..	..	..	..	..	..	..	..
503	1	1	..	..	..	..	..	..	..	..	..	..
504	..	..	..	..	..	..	1	1	..	..	..	..
505	..	..	..	..	..	1	1	..	..	..	..	..
506	1	1	..	..	..	..	..	..	..	..	..	..
507	1	1	..	..	..	..	..	..	..	..	..	..
508	1	1	..	..	..	..	..	..	..	..	..	..
509	..	1	..	..	1	..	..	..	..	..	..	..
510	1	1	..	..	..	..	..	..	..	..	..	..
511	1	1	..	..	..	..	..	..	..	..	..	..
512	1	1	..	..	..	..	..	..	..	..	..	..
513	1	1	..	..	..	..	..	..	..	..	..	..
514	1	1	..	..	..	..	..	..	..	..	..	..
515	..	1	..	..	1	..	..	..	..	..	..	..
516	..	..	..	..	..	..	..	1	1	..	..	..
517	1	1	..	..	..	..	..	..	..	..	..	..
518	1	1	..	..	..	..	..	..	..	..	..	..
	27	27	1	3	5	3	7	6	1	2		

NO CHANGE IMP.—BOOM RAILS

10. January 1, 1904 to January 22, 1906

601	1	1	..	..	..	..	..	..	..	..	..	..
602	1	1	..	..	..	..	..	..	..	..	..	..
603	..	..	..	..	1	..	..	1	..	..	..	..
604	1	1	..	..	..	..	..	..	..	..	..	..
606	..	..	1	1	..	..	..	..	..	..	..	..
607	1	1	..	..	..	..	..	..	..	..	..	..
611	..	1	1	..	..	..	..	..	..	..	..	..
613	1	1	..	..	..	..	..	..	..	..	..	..
614	..	..	..	1	1	..	..	..	..	..	..	..
616	1	..	..	..	..	..	..	..	..	1	..	..
617	1	1	..	..	..	..	..	..	..	..	..	..
618	1	1	..	..	..	..	..	..	..	..	..	..
619	..	..	..	..	..	..	1	1	..	..	..	..

PERCENTAGE OF ACCURACY WITHIN

	⅓ OF 1		⅓—½		½—1		1—2		2—5		5 AND OVER	
ITEM	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.
625	1	1	..	..	..	..	..	..	..	..	..	..
628	..	..	..	..	1	..	..	1	..	..	..	..
629	1	..	..	..	..	..	..	1	..	..	..	..
630	1	1	..	..	..	..	..	..	..	..	..	..
631	..	..	..	1	..	..	1	..	..	..	..	..
632	..	..	..	..	1	1	..	..	..	..	..	..
633	1	1	..	..	..	..	..	..	..	..	..	..
634	1	1	..	..	..	..	..	..	..	..	..	..
635	1	1	..	..	..	..	..	..	..	..	..	..
637	1	1	..	..	..	..	..	..	..	..	..	..
638	1	1	..	..	..	..	..	..	..	..	..	..
639	1	..	..	1	..	..	..	..	..	..	..	..
640	1	1	..	..	..	..	..	..	..	..	..	..
641	1	1	..	..	..	..	..	..	..	..	..	..
642	..	1	..	..	1	..	..	..	..	..	..	..
643	1	1	..	..	..	..	..	..	..	..	..	..
644	1	..	..	1	..	..	..	..	..	..	..	..
645	..	..	..	..	1	1	..	..	..	..	..	..
646	..	1	1	..	..	..	..	..	..	..	..	..
647	1	1	..	..	..	..	..	..	..	..	..	..
648	1	1	..	..	..	..	..	..	..	..	..	..
649	..	..	..	..	..	..	..	..	1	1	..	..
650	1	1	..	..	..	..	..	..	..	..	..	..
651	1	1	..	..	..	..	..	..	..	..	..	..
652	1	1	..	..	..	..	..	..	..	..	..	..
653	1	1	..	..	..	..	..	..	..	..	..	..
654	..	..	..	..	..	..	1	..	..	1	..	..
655	1	1	..	..	..	..	..	..	..	..	..	..
656	1	1	..	..	..	..	..	..	..	..	..	..
657	1	1	..	..	..	..	..	..	..	..	..	..
658	1	1	..	..	..	..	..	..	..	..	..	..
659	..	1	..	..	1	..	..	..	..	..	..	..
660	..	..	1	..	..	1	..	..	..	..	..	..
661	..	..	..	..	1	..	..	..	..	1	..	..
662	1	1	..	..	..	..	..	..	..	..	..	..
663	1	1	..	..	..	..	..	..	..	..	..	..
664	1	1	..	..	..	..	..	..	..	..	..	..
665	1	..	..	..	..	1	..	..	..	..	..	..
666	1	1	..	..	..	..	..	..	..	..	..	..
667	1	1	..	..	..	..	..	..	..	..	..	..
668	1	1	..	..	..	..	..	..	..	..	..	..
669	..	..	1	..	..	1	..	..	..	..	..	..
670	1	1	..	..	..	..	..	..	..	..	..	..
671	..	..	..	..	1	1	..	..	..	..	..	..
672	1	1	..	..	..	..	..	..	..	..	..	..
673	..	1	..	..	..	..	1	..	..	..	..	..
674	1	1	..	..	..	..	..	..	..	..	..	..

PERCENTAGE OF ACCURACY WITHIN

	⅓ OF 1		⅓—½		½—1		1—2		2—5		5 AND OVER	
ITEM	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.
675	..	..	..	..	..	..	..	..	1	1	..	..
676	1	1	..	..	..	..	..	..	..	..	..	..
677	1	1	..	..	..	..	..	..	..	..	..	..
678	1	..	..	1	..	..	..	..	..	..	..	..
679	1	1	..	..	..	..	..	..	..	..	..	..
680	..	1	..	..	1	..	..	..	..	..	..	..
681	1	..	..	..	..	..	..	..	..	1	..	..
682	1	1	..	..	..	..	..	..	..	..	..	..
683	..	1	..	..	..	..	1	..	..	..	..	..
684	..	..	..	..	1	1	..	..	..	..	..	..
685	1	1	..	..	..	..	..	..	..	..	..	..
686	1	1	..	..	..	..	..	..	..	..	..	..
687	1	1	..	..	..	..	..	..	..	..	..	..
688	1	1	..	..	..	..	..	..	..	..	..	..
689	1	1	..	..	..	..	..	..	..	..	..	..
690	..	1	1	..	..	..	..	..	..	..	..	..
691	1	1	..	..	..	..	..	..	..	..	..	..
692	1	1	..	..	..	..	..	..	..	..	..	..
693	1	..	..	..	..	1	..	..	..	..	..	..
694	1	1	..	..	..	..	..	..	..	..	..	..
695	1	1	..	..	..	..	..	..	..	..	..	..
	57	57	6	6	11	8	5	4	2	6		

12. November 21, 1907 to December 30, 1909

762	1	1	..	..	..	..	..	..	..	..	..	..
763	..	..	..	..	..	..	..	..	1	1	..	..
764	1	1	..	..	..	..	..	..	..	..	..	..
765	..	..	1	..	..	..	..	1	..	..	..	..
766	..	..	..	..	1	..	..	1	..	..	..	..
767	1	1	..	..	..	..	..	..	..	..	..	..
768	1	..	..	..	..	1	..	..	..	..	..	..
769	..	..	..	..	..	1	1	..	..	..	..	..
770	..	1	..	..	..	..	1	..	..	..	..	..
771	..	..	..	..	1	1	..	..	..	..	..	..
772	..	..	..	..	..	..	..	..	1	1	..	..
773	1	1	..	..	..	..	..	..	..	..	..	..
774	1	1	..	..	..	..	..	..	..	..	..	..
775	..	1	..	..	1	..	..	..	..	..	..	..
776	1	..	..	..	..	1	..	..	..	..	..	..
777	1	1	..	..	..	..	..	..	..	..	..	..
778	1	1	..	..	..	..	..	..	..	..	..	..
779	..	1	..	..	1	..	..	..	..	..	..	..
780	1	1	..	..	..	..	..	..	..	..	..	..
781	1	1	..	..	..	..	..	..	..	..	..	..
782	1	1	..	..	..	..	..	..	..	..	..	..
783	1	..	..	1	..	..	..	..	..	..	..	..

PERCENTAGE OF ACCURACY WITHIN

	⅓ OF 1		⅓—½		½—1		1—2		2—5		5 AND OVER	
ITEM	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.
784	1	1	..	..	..	..	..	..	..	..	..	..
785	..	1	1	..	..	..	..	..	..	..	..	..
786	..	..	..	..	..	..	1	..	..	1	..	..
787	1	1	..	..	..	..	..	..	..	..	..	..
788	1	1	..	..	..	..	..	..	..	..	..	..
789	1	1	..	..	..	..	..	..	..	..	..	..
790	..	1	..	..	1	..	..	..	..	..	..	..
791	..	..	1	..	..	..	..	1	..	..	..	..
792	1	1	..	..	..	..	..	..	..	..	..	..
793	1	1	..	..	..	..	..	..	..	..	..	..
794	1	1	..	..	..	..	..	..	..	..	..	..
795	1	1	..	..	..	..	..	..	..	..	..	..
796	1	1	..	..	..	..	..	..	..	..	..	..
797	..	1	1	..	..	..	..	..	..	..	..	..
798	..	1	..	..	1	..	..	..	..	..	..	..
799	1	1	..	..	..	..	..	..	..	..	..	..
800	1	1	..	..	..	..	..	..	..	..	..	..
801	1	..	..	..	..	1	..	..	..	..	..	..
802	1	1	..	..	..	..	..	..	..	..	..	..
803	..	..	..	..	..	..	1	1	..	..	..	..
804	1	..	..	..	..	1	..	..	..	..	..	..
805	..	1	..	..	1	..	..	..	..	..	..	..
806	1	1	..	..	..	..	..	..	..	..	..	..
807	..	..	..	..	1	1	..	..	..	..	..	..
808	1	1	..	..	..	..	..	..	..	..	..	..
809	1	..	..	..	..	..	..	1	..	..	..	..
810	..	1	..	..	1	..	..	..	..	..	..	..
811	1	1	..	..	..	..	..	..	..	..	..	..
812	1	..	..	..	..	1	..	..	..	..	..	..
813	1	1	..	..	..	..	..	..	..	..	..	..
814	1	1	..	..	..	..	..	..	..	..	..	..
815	1	1	..	..	..	..	..	..	..	..	..	..
816	1	1	..	..	..	..	..	..	..	..	..	..
817	1	1	..	..	..	..	..	..	..	..	..	..
818	..	..	..	1	1	..	..	..	..	..	..	..
819	1	1	..	..	..	..	..	..	..	..	..	..
820	..	1	..	..	1	..	..	..	..	..	..	..
821	..	..	..	..	..	1	1	..	..	..	..	..
822	1	1	..	..	..	..	..	..	..	..	..	..
823	..	..	..	..	1	..	..	1	..	..	..	..
824	1	1	..	..	..	..	..	..	..	..	..	..
825	1	1	..	..	..	..	..	..	..	..	..	..
826	..	1	..	..	..	..	1	..	..	..	..	..
827	1	1	..	..	..	..	..	..	..	..	..	..
828	..	..	1	1	..	..	..	..	..	..	..	..
829	1	1	..	..	..	..	..	..	..	..	..	..
830	1	1	..	..	..	..	..	..	..	..	..	..
	44	48	5	3	12	9	6	6	2	3		

14. December 24, 1914 to November 6, 1916

PERCENTAGE OF ACCURACY WITHIN

	⅓ OF 1		⅓—½		½—1		1—2		2—5		5 AND OVER	
ITEM	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.
712	..	..	1	..	..	1	..	..	..	..	..	..
713	..	..	..	..	1	..	..	1	..	..	..	..
714	..	1	..	..	..	..	1	..	..	..	..	..
715	1	..	..	..	..	..	..	1	..	..	..	..
716	1	1	..	..	..	..	..	..	..	..	..	..
717	..	1	..	..	1	..	..	..	..	..	..	..
718	1	1	..	..	..	..	..	..	..	..	..	..
719	1	..	..	1	..	..	..	..	..	..	..	..
720	..	..	1	..	..	..	..	1	..	..	..	..
721	..	1	1	..	..	..	..	..	..	..	..	..
722	1	..	..	..	..	..	..	1	..	..	..	..
723	..	1	1	..	..	..	..	..	..	..	..	..
724	1	1	..	..	..	..	..	..	..	..	..	..
725	1	1	..	..	..	..	..	..	..	..	..	..
726	1	1	..	..	..	..	..	..	..	..	..	..
727	1	1	..	..	..	..	..	..	..	..	..	..
732	1	1	..	..	..	..	..	..	..	..	..	..
	10	11	4	1	2	1	1	4	0	0		

16. December 19, 1917 to May 27, 1919

901	1	1	..	..	..	..	..	..	..	..	..	..
902	1	1	..	..	..	..	..	..	..	..	..	..
903	1	1	..	..	..	..	..	..	..	..	..	..
904	1	1	..	..	..	..	..	..	..	..	..	..
905	..	..	..	..	..	1	1	..	..	..	..	..
906	1	1	..	..	..	..	..	..	..	..	..	..
907	1	1	..	..	..	..	..	..	..	..	..	..
908	1	1	..	..	..	..	..	..	..	..	..	..
909	..	1	..	..	1	..	..	..	..	..	..	..
910	..	..	..	..	..	1	1	..	..	..	..	..
911	1	1	..	..	..	..	..	..	..	..	..	..
912	1	..	..	..	..	1	..	..	..	..	..	..
913	1	1	..	..	..	..	..	..	..	..	..	..
914	1	1	..	..	..	..	..	..	..	..	..	..
917	..	..	1	..	..	1	..	..	..	..	..	..
918	..	..	..	..	..	..	1	..	..	1	..	..
919	1	1	..	..	..	..	..	..	..	..	..	..
741	..	1	1	..	..	..	..	..	..	..	..	..
742	..	..	..	..	..	..	1	1	..	..	..	..
743	1	1	..	..	..	..	..	..	..	..	..	..
745	1	..	..	..	..	1	..	..	..	..	..	..
746	1	..	..	..	..	..	..	..	..	1	..	..
	15	14	2	0	1	5	4	1	0	2		

NO CHANGE DEC.–DEP. IND.

2. January 20, 1906 to January 15, 1907

PERCENTAGE OF ACCURACY WITHIN

	⅓ OF 1		⅓—½		½—1		1—2		2—5		5 AND OVER	
ITEM	D.A.	B.D.	D.A.	B.A.	D.A.	B.D.	D.A.	B.A.	D.A.	B.D.	D.A.	B.D.
71	1	1	..	..	..	..	..	..	..	..	..	..
72	..	..	..	..	..	..	1	1	..	..	..	..
73	1	..	..	..	..	..	..	1	..	..	..	..
74	1	1	..	..	..	..	..	..	..	..	..	..
75	1	1	..	..	..	..	..	..	..	..	..	..
76	1	1	..	..	..	..	..	..	..	..	..	..
77	..	..	..	1	..	..	1	..	..	..	..	..
78	1	1	..	..	..	..	..	..	..	..	..	..
79	1	1	..	..	..	..	..	..	..	..	..	..
80	1	..	..	1	..	..	..	..	..	..	..	..
81	1	..	..	..	..	1	..	..	..	..	..	..
82	1	..	..	..	..	1	..	..	..	..	..	..
83	..	..	..	..	1	1	..	..	..	..	..	..
84	1	..	..	..	..	1	..	..	..	..	..	..
85	1	1	..	..	..	..	..	..	..	..	..	..
86	1	1	..	..	..	..	..	..	..	..	..	..
87	1	1	..	..	..	..	..	..	..	..	..	..
88	..	1	1	..	..	..	..	..	..	..	..	..
89	1	1	..	..	..	..	..	..	..	..	..	..
90	1	1	..	..	..	..	..	..	..	..	..	..
91	1	1	..	..	..	..	..	..	..	..	..	..
92	..	1	..	..	1	..	..	..	..	..	..	..
93	1	..	..	..	..	1	..	..	..	..	..	..
94	..	..	..	..	1	1	..	..	..	..	..	..
95	1	1	..	..	..	..	..	..	..	..	..	..
96	..	1	..	..	1	..	..	..	..	..	..	..
97	1	1	..	..	..	..	..	..	..	..	..	..
98	1	1	..	..	..	..	..	..	..	..	..	..
99	1	1	..	..	..	..	..	..	..	..	..	..
100	1	1	..	..	..	..	..	..	..	..	..	..
101	1	1	..	..	..	..	..	..	..	..	..	..
102	1	1	..	..	..	..	..	..	..	..	..	..
103	..	..	1	..	..	1	..	..	..	..	..	..
104	1	1	..	..	..	..	..	..	..	..	..	..
105	..	..	..	..	1	..	..	1	..	..	..	..
106	1	1	..	..	..	..	..	..	..	..	..	..
107	1	1	..	..	..	..	..	..	..	..	..	..
108	1	1	..	..	..	..	..	..	..	..	..	..
109	1	1	..	..	..	..	..	..	..	..	..	..
110	1	..	..	..	..	1	..	..	..	..	..	..
111	1	1	..	..	..	..	..	..	..	..	..	..
112	1	1	..	..	..	..	..	..	..	..	..	..
113	1	1	..	..	..	..	..	..	..	..	..	..

PERCENTAGE OF ACCURACY WITHIN

	⅓ OF 1		⅓—½		½—1		1—2		2—5		5 AND OVER	
ITEM	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.
114	1	1	..	..	..	..	..	..	..	..	..	..
115	1	1	..	..	..	..	..	..	..	..	..	..
116	1	1	..	..	..	..	..	..	..	..	..	..
117	1	1	..	..	..	..	..	..	..	..	..	..
118	1	1	..	..	..	..	..	..	..	..	..	..
119	1	1	..	..	..	..	..	..	..	..	..	..
120	..	..	..	..	..	..	..	..	1	..	..	1
121	1	1	..	..	..	..	..	..	..	..	..	..
122	1	1	..	..	..	..	..	..	..	..	..	..
123	..	1	..	..	1	..	..	..	..	..	..	..
124	..	..	..	..	1	1	..	..	..	..	..	..
125	1	..	..	..	..	1	..	..	..	..	..	..
126	1	1	..	..	..	..	..	..	..	..	..	..
127	1	..	..	..	..	..	..	..	..	1	..	..
128	1	1	..	..	..	..	..	..	..	..	..	..
129	1	1	..	..	..	..	..	..	..	..	..	..
130	..	..	..	..	1	..	..	1	..	..	..	..
131	1	1	..	..	..	..	..	..	..	..	..	..
132	..	..	..	..	1	..	..	1	..	..	..	..
133	1	1	..	..	..	..	..	..	..	..	..	..
134	1	1	..	..	..	..	..	..	..	..	..	..
135	1	..	..	..	..	..	..	1	..	..	..	..
136	1	1	..	..	..	..	..	..	..	..	..	..
137	1	1	..	..	..	..	..	..	..	..	..	..
138	1	..	..	..	..	1	..	..	..	..	..	..
139	1	1	..	..	..	..	..	..	..	..	..	..
140	1	..	..	..	..	..	..	..	..	1	..	..
141	..	..	..	..	..	..	..	..	1	1	..	..
142	1	1	..	..	..	..	..	..	..	..	..	..
143	..	..	..	..	..	..	1	..	..	1	..	..
144	1	1	..	..	..	..	..	..	..	..	..	..
145	1	1	..	..	..	..	..	..	..	..	..	..
	59	51	2	2	9	11	3	6	2	4	0	1

6. November 22, 1916 to December 18, 1917

337	1	1	..	..	..	..	..	..	..	..	..	..
338	1	1	..	..	..	..	..	..	..	..	..	..
339	..	..	..	..	..	..	..	..	1	1	..	..
340	1	1	..	..	..	..	..	..	..	..	..	..
341	..	1	..	..	1	..	..	..	..	..	..	..
342	1	1	..	..	..	..	..	..	..	..	..	..
343	..	..	..	1	1	..	..	..	..	..	..	..
	4	5	0	1	2	0	0	0	1	1	0	0

8. November 4, 1919 to August 24, 1921

	PERCENTAGE OF ACCURACY WITHIN											
	⅓ OF 1		⅓—½		½—1		1—2		2—5		5 AND OVER	
ITEM	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.
421	1	1	..	..	..	..	..	..	..	..	..	..
425	..	..	..	..	1	..	..	..	..	1	..	..
	1	1	0	0	1	0	0	0	0	1	0	0

	NO CHANGE		DEC.–DEP.		RAILS							
11. January 23, 1906 to November 20, 1907												
1033	..	..	..	..	1	..	..	1	..	..	..	..
1034	..	1	1	..	..	..	..	..	..	..	..	..
1035	..	..	..	..	..	1	1	..	..	..	..	..
1036	..	..	..	..	1	..	..	1	..	..	..	..
1037	..	1	..	..	1	..	..	..	..	..	..	..
1038	1	..	..	..	..	..	..	..	..	1	..	..
1039	1	1	..	..	..	..	..	..	..	..	..	..
1040	..	1	..	..	1	..	..	..	..	..	..	..
1041	..	..	..	..	..	..	1	1	..	..	..	..
1042	..	..	..	..	..	..	..	1	1	..	..	..
1043	1	1	..	..	..	..	..	..	..	..	..	..
1044	1	1	..	..	..	..	..	..	..	..	..	..
1045	1	..	..	..	..	1	..	..	..	..	..	..
1046	1	..	..	..	..	..	..	..	..	1	..	..
1047	1	1	..	..	..	..	..	..	..	..	..	..
1048	1	1	..	..	..	..	..	..	..	..	..	..
1049	..	..	..	..	1	..	..	1	..	..	..	..
1050	1	1	..	..	..	..	..	..	..	..	..	..
1051	1	1	..	..	..	..	..	..	..	..	..	..
1052	1	1	..	..	..	..	..	..	..	..	..	..
1053	..	1	..	..	1	..	..	..	..	..	..	..
1054	..	1	1	..	..	..	..	..	..	..	..	..
1055	1	..	..	1	..	..	..	..	..	..	..	..
1056	..	1	1	..	..	..	..	..	..	..	..	..
1057	..	1	..	..	1	..	..	..	..	..	..	..
1058	1	1	..	..	..	..	..	..	..	..	..	..
1059	1	1	..	..	..	..	..	..	..	..	..	..
1060	1	1	..	..	..	..	..	..	..	..	..	..
1061	1	1	..	..	..	..	..	..	..	..	..	..
	16	19	3	1	7	2	2	5	1	2		

15. November 7, 1916 to December 18, 1917

	PERCENTAGE OF ACCURACY WITHIN											
	⅓ OF 1		⅓—½		½—1		1—2		2—5		5 AND OVER	
ITEM	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.
728	1	1	..	..	..	..	..	..	..	..	..	..
729	1	1	..	..	..	..	..	..	..	..	..	..
730	1	1	..	..	..	..	..	..	..	..	..	..
731	1	1	..	..	..	..	..	..	..	..	..	..
	4	4	0	0	0	0	0	0	0	0	0	0

19. May 28, 1919 to June 20, 1921

920	1	..	..	..	..	..	..	1	..	..	..	..
747	1	1	..	..	..	..	..	..	..	..	..	..
748	..	..	..	..	..	..	1	..	..	1	..	..
749	1	..	..	..	..	1	..	..	..	..	..	..
750	..	..	1	1	..	..	..	..	..	..	..	..
751	1	..	..	1	..	..	..	..	..	..	..	..
	4	1	1	2	0	1	1	1	0	1	0	0

	INCREASES				IMP.–BOOM				IND.			

1. January 1, 1904 to January 19, 1906

536	1	..	..	1	..	..	..	..	..	..	..	..
1101	..	..	..	1	..	..	1	..	..	..	..	..
1102	1	1	..	..	..	..	..	..	..	..	..	..
545	1	..	..	..	..	1	..	..	..	..	..	..
	3	1	0	2	0	1	1	0	0	0	0	0

3. November 16, 1907 to November 19, 1909

529	1	..	..	..	..	..	..	..	..	1	..	..
547	1	1	..	..	..	..	..	..	..	..	..	..
	2	1	0	0	0	0	0	0	0	1	0	0

5. December 24, 1914 to November 21, 1916

PERCENT OF ACCURACY WITHIN

	⅓ OF 1		⅓—½		½—1		1—2		2—5		5 AND OVER	
ITEM	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.
1147	1	..	..	1	..	..	..	..	..	..	..	..
1148	1	1	..	..	..	..	..	..	..	..	..	..
1149	1	1	..	..	..	..	..	..	..	..	..	..
1150	1	1	..	..	..	..	..	..	..	..	..	..
1151	1	1	..	..	..	..	..	..	..	..	..	..
1152	..	..	..	..	..	..	..	..	1	1	..	..
1242	..	..	1	..	..	..	..	1	..	..	..	..
1243	1	1	..	..	..	..	..	..	..	..	..	..
1244	1	1	..	..	..	..	..	..	..	..	..	..
1245	..	..	..	..	..	..	..	..	..	..	1	1
1246	1	1	..	..	..	..	..	..	..	..	..	..
1247	1	1	..	..	..	..	..	..	..	..	..	..
1248	1	1	..	..	..	..	..	..	..	..	..	..
1249	..	..	..	..	..	..	..	..	1	1	..	..
1250	..	1	..	..	..	..	..	..	1	..	..	..
1251	1	1	..	..	..	..	..	..	..	..	..	..
1252	1	..	..	..	..	1	..	..	..	..	..	..
1253	..	..	..	..	..	..	..	1	1	..	..	..
1254	1	1	..	..	..	..	..	..	..	..	..	..
1255	1	1	..	..	..	..	..	..	..	..	..	..
1256	..	1	1	..	..	..	..	..	..	..	..	..
1337	1	1	..	..	..	..	..	..	..	..	..	..
1332	1	..	..	..	..	..	..	..	..	1	..	..
1323	..	1	..	..	..	..	..	..	1	..	..	..
1325	..	..	..	..	..	..	..	..	1	1	..	..
1326	..	..	..	..	..	..	1	1	..	..	..	..
1317	1	1	..	..	..	..	..	..	..	..	..	..
1318	1	1	..	..	..	..	..	..	..	..	..	..
1319	..	1	1	..	..	..	..	..	..	..	..	..
1320	1	1	..	..	..	..	..	..	..	..	..	..
1314	1	..	..	..	..	1	..	..	..	..	..	..
1338	1	1	..	..	..	..	..	..	..	..	..	..
1363	..	..	..	..	..	..	..	..	1	1	..	..
1364	..	1	..	..	1	..	..	..	..	..	..	..
1365	..	..	..	1	..	..	1	..	..	..	..	..
1370	..	..	..	..	..	..	..	..	1	1	..	..
1371	..	1	..	..	..	..	1	..	..	..	..	..
1372	1	1	..	..	..	..	..	..	..	..	..	..
1373	1	1	..	..	..	..	..	..	..	..	..	..
1374	1	..	..	..	..	..	..	..	..	1	..	..
1375	..	..	..	..	..	..	1	..	..	1	..	..
1376	..	..	..	..	..	..	..	..	1	..	..	1
1377	..	..	..	..	..	..	..	..	1	1	..	..
1378	1	..	..	..	..	1	..	..	..	..	..	..
1379	1	..	..	..	..	..	..	..	..	1	..	..

PERCENT OF ACCURACY WITHIN

	⅓ OF 1		⅓—½		½—1		1—2		2—5		5 AND OVER	
ITEM	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.
1380	1	1	..	..	..	..	..	..	..	..	..	..
1381	1	1	..	..	..	..	..	..	..	..	..	..
1382	..	..	..	..	..	..	..	..	1	..	..	1
1383	1	1	..	..	..	..	..	..	..	..	..	..
1384	1	..	..	..	..	..	..	1	..	..	..	..
1385	1	..	..	..	..	..	..	1	..	..	..	..
1386	1	..	..	1	..	..	..	..	..	..	..	..
1387	..	..	..	..	..	..	..	..	..	..	1	1
1388	..	..	..	..	..	..	1	1	..	..	..	..
1389	..	..	..	..	1	..	..	1	..	..	..	..
1390	1	1	..	..	..	..	..	..	..	..	..	..
1391	1	1	..	..	..	..	..	..	..	..	..	..
1392	1	1	..	..	..	..	..	..	..	..	..	..
1393	..	..	..	..	..	..	..	..	..	1	1	..
1394	1	1	..	..	..	..	..	..	..	..	..	..
1395	1	..	..	..	..	..	..	..	..	1	..	..
1396	..	..	1	..	..	..	..	..	..	1	..	..
	37	32	4	3	2	3	5	7	11	13	3	4

7. December 19, 1917 to November 3, 1919

1362	1	1	..	..	..	..	..	..	..	..	..	..
1342	..	..	..	..	..	..	..	..	1	1	..	..
1343	1	1	..	..	..	..	..	..	..	..	..	..
1344	1	1	..	..	..	..	..	..	..	..	..	..
1345	..	..	..	..	..	..	1	1	..	..	..	..
1346	1	..	..	..	..	1	..	..	..	..	..	..
1347	1	1	..	..	..	..	..	..	..	..	..	..
1348	1	..	..	..	..	..	..	1	..	..	..	..
1349	..	..	..	..	..	..	..	1	1	..	..	..
1350	..	..	..	1	1	..	..	..	..	..	..	..
1351	1	1	..	..	..	..	..	..	..	..	..	..
1327	1	1	..	..	..	..	..	..	..	..	..	..
1328	1	1	..	..	..	..	..	..	..	..	..	..
1322	..	..	..	..	..	..	1	..	..	1	..	..
1324	..	..	..	..	..	..	..	..	1	1	..	..
1321	1	..	..	..	..	1	..	..	..	..	..	..
1312	..	..	1	..	..	..	..	..	..	1	..	..
1313	..	..	..	..	..	1	..	..	1	..	..	..
1315	..	..	..	..	..	..	1	..	..	..	..	1
1316	..	..	..	..	..	..	..	..	1	1	..	..
1307	1	1	..	..	..	..	..	..	..	..	..	..
1308	1	1	..	..	..	..	..	..	..	..	..	..
1309	1	1	..	..	..	..	..	..	..	..	..	..
1310	..	..	..	..	..	..	1	..	..	1	..	..

	PERCENT OF ACCURACY WITHIN											
	⅓ OF 1		⅓—½		½—1		1—2		2—5		5 AND OVER	
ITEM	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.
1311	1	1	..	..	..	..	..	..	..	..	..	..
1301	1	1	..	..	..	..	..	..	..	..	..	..
1302	1	..	..	..	..	1	..	..	..	..	..	..
1303	..	..	..	..	..	..	..	1	1	..	..	..
1304	1	..	..	..	..	..	..	..	..	1	..	..
1305	..	..	..	..	..	..	..	..	..	..	1	1
1306	1	..	..	..	..	1	..	..	..	..	..	..
	18	12	1	1	1	5	4	4	6	7	1	2

9. August 25, 1921—

1146	..	..	..	..	..	..	1	..	..	..	..	1
1135	..	..	..	..	..	1	1	..	..	..	..	..
1136	1	1	..	..	..	..	..	..	..	..	..	..
1339	..	..	..	..	..	..	1	1	..	..	..	..
1340	1	1	..	..	..	..	..	..	..	..	..	..
	2	2	0	0	0	1	3	1	0	0	0	1

	INCREASES		IMP.–BOOM		RAILS							
10. January 1, 1904 to January 22, 1906												
1403	1	1	..	..	..	..	..	..	..	..	..	..
1404	1	1	..	..	..	..	..	..	..	..	..	..
1501	1	1	..	..	..	..	..	..	..	..	..	..
1502	1	1	..	..	..	..	..	..	..	..	..	..
1503	1	1	..	..	..	..	..	..	..	..	..	..
527	..	1	..	..	..	..	1	..	..	..	..	..
1255	1	1	..	..	..	..	..	..	..	..	..	..
1256	..	1	1	..	..	..	..	..	..	..	..	..
	6	8	1	0	0	0	1	0	0	0	0	0
12. November 21, 1907 to December 30, 1909												
1509	1	..	..	1	..	..	..	..	..	..	..	..
1536	..	1	..	..	1	..	..	..	..	..	..	..
1537	1	1	..	..	..	..	..	..	..	..	..	..
530	1	1	..	..	..	..	..	..	..	..	..	..
1405	..	1	..	..	..	..	1	..	..	..	..	..
529	..	1	..	..	..	..	..	..	..	..	..	..
	3	5	1	1	1	0	1	0	0	0	0	0

14. December 24, 1914 to November 6, 1916

PERCENT OF ACCURACY WITHIN

	⅓ OF 1		⅓—½		½—1		1—2		2—5		5 AND OVER	
ITEM	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.
1423	1	..	..	..	..	..	..	..	..	1	..	..
1424	1	1	..	..	..	..	..	..	..	..	..	..
1401	..	..	1	..	..	1	..	..	..	..	..	..
1402	1	1	..	..	..	..	..	..	..	..	..	..
	3	2	1	0	0	1	0	0	0	1	0	0

18. June 21, 1921—

1414	1	..	..	..	..	..	..	1	..	..	..	..
1415	..	..	..	..	..	..	..	..	1	1	..	..
1416	1	..	..	..	..	..	..	1	..	..	..	..
2000	..	..	..	..	..	..	..	..	1	1	..	..
2001	1	..	..	..	..	1	..	..	..	..	..	..
	3	0	0	0	0	1	0	2	2	2	0	0

	INCREASES				DEC.–DEP.				IND.			

2. January 20, 1906 to November 15, 1907

1103	..	..	..	..	..	1	1	..	..	..	..	..
1104	..	..	..	1	..	..	1	..	..	..	..	..
1105	1	..	..	..	..	..	..	1	..	..	..	..
1106	..	1	..	..	..	..	1	..	..	..	..	..
1107	1	1	..	..	..	..	..	..	..	..	..	..
1108	..	..	..	..	..	1	1	..	..	..	..	..
1109	1	1	..	..	..	..	..	..	..	..	..	..
1110	..	1	..	..	..	..	1	..	..	..	..	..
1111	..	..	..	..	..	..	..	..	..	..	1	1
1112	1	..	..	..	..	1	..	..	..	..	..	..
537	..	..	..	..	..	..	..	..	1	1	..	..
538	1	1	..	..	..	..	..	..	..	..	..	..
546	1	..	..	..	..	..	..	..	..	1	..	..
521	..	..	..	..	1	1	..	..	..	..	..	..
522	..	1	1	..	..	..	..	..	..	..	..	..
	6	6	1	1	1	4	5	1	1	2	1	1

4. November 20, 1909 to December 23, 1914

PERCENT OF ACCURACY WITHIN

	⅓ OF 1		⅓—½		½—1		1—2		2—5		5 AND OVER	
ITEM	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.
523	1	1	..	..	..	..	..	..	..	..	..	..
524	1	..	..	..	..	..	..	1	..	..	..	..
525	..	..	..	..	1	..	..	1	..	..	..	..
526	..	..	1	1	..	..	..	..	..	..	..	..
548	1	1	..	..	..	..	..	..	..	..	..	..
540	..	..	..	..	..	..	..	..	1	1	..	..
541	..	..	..	..	..	..	..	..	1	1	..	..
542	1	1	..	..	..	..	..	..	..	..	..	..
543	..	..	..	..	..	..	1	..	..	1	..	..
544	1	1	..	..	..	..	..	..	..	..	..	..
1238	..	..	1	..	..	..	..	1	..	..	..	..
1239	1	1	..	..	..	..	..	..	..	..	..	..
1240	1	..	..	..	..	1	..	..	..	..	..	..
1241	..	..	1	..	..	1	..	..	..	..	..	..
1252	1	..	..	..	..	1	..	..	..	..	..	..
1253	..	..	..	..	..	..	..	1	1	..	..	..
1254	1	1	..	..	..	..	..	..	..	..	..	..
1113	1	1	..	..	..	..	..	..	..	..	..	..
1114	1	..	..	..	..	..	..	1	..	..	..	..
1115	1	..	..	..	..	1	..	..	..	..	..	..
1116	..	1	1	..	..	..	..	..	..	..	..	..
1117	1	1	..	..	..	..	..	..	..	..	..	..
1118	..	..	..	..	..	..	..	..	1	1	..	..
1237	..	..	..	..	..	..	1	1	..	..	..	..
	13	9	4	1	1	4	2	6	4	4	0	0

6. November 22, 1916 to December 18, 1917

1397	..	..	1	..	..	..	..	1	..	..	..	..
1398	1	1	..	..	..	..	..	..	..	..	..	..
1399	1	..	..	..	..	1	..	..	..	..	..	..
1400	1	1	..	..	..	..	..	..	..	..	..	..
1401a	1	1	..	..	..	..	..	..	..	..	..	..
1402a	..	1	1	..	..	..	..	..	..	..	..	..
1403a	1	..	..	..	..	..	..	1	..	..	..	..
1404a	1	1	..	..	..	..	..	..	..	..	..	..
1405a	1	1	..	..	..	..	..	..	..	..	..	..
1406a	..	..	..	..	..	..	1	..	..	1	..	..
1407a	1	..	..	..	..	1	..	..	..	..	..	..
1408a	..	..	..	..	..	..	..	1	1	..	..	..
1409a	..	..	..	..	..	..	..	1	1	..	..	..
1410a	1	1	..	..	..	..	..	..	..	..	..	..
1411a	..	..	..	..	..	..	1	1	..	..	..	..

PERCENT OF ACCURACY WITHIN

	⅓ OF 1		⅓—½		½—1		1—2		2—5		5 AND OVER	
ITEM	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.
1412a	..	1	..	..	..	..	..	..	..	..	1	..
1413a	..	1	..	..	..	..	1	..	..	..	..	..
1414a	1	1	..	..	..	..	..	..	..	..	..	..
1415a	..	..	..	..	..	..	1	1	..	..	..	..
1416a	1	..	..	1	..	..	..	..	..	..	..	..
1201	..	1	..	..	1	..	..	..	..	..	..	..
1202	..	..	..	..	..	..	..	1	1	..	..	..
1203	1	1	..	..	..	..	..	..	..	..	..	..
1204	1	1	..	..	..	..	..	..	..	..	..	..
1205	1	1	..	..	..	..	..	..	..	..	..	..
1206	..	1	..	..	1	..	..	..	..	..	..	..
1207	1	1	..	..	..	..	..	..	..	..	..	..
1208	1	1	..	..	..	..	..	..	..	..	..	..
1209	1	1	..	..	..	..	..	..	..	..	..	..
1210	1	1	..	..	..	..	..	..	..	..	..	..
1211	1	1	..	..	..	..	..	..	..	..	..	..
1212	..	..	1	..	..	..	..	..	..	..	..	1
1213	..	..	..	..	..	..	..	..	..	..	1	1
1214	..	..	..	..	..	..	..	..	..	..	1	1
1215	..	..	..	..	..	..	1	..	..	1	..	..
1216	..	..	..	..	1	..	..	..	..	1	..	..
1217	..	..	..	..	..	..	..	..	1	1	..	..
1218	1	1	..	..	..	..	..	..	..	..	..	..
1219	1	1	..	..	..	..	..	..	..	..	..	..
1220	1	..	..	..	..	..	..	1	..	..	..	..
1221	1	..	..	..	..	..	..	1	..	..	..	..
1222	..	..	..	..	..	..	1	1	..	..	..	..
1223	..	..	..	..	..	..	..	..	1	1	..	..
1224	1	1	..	..	..	..	..	..	..	..	..	..
1225	..	1	..	..	1	..	..	..	..	..	..	..
1226	1	..	..	1	..	..	..	..	..	..	..	..
1227	..	1	..	..	1	..	..	..	..	..	..	..
1228	1	1	..	..	..	..	..	..	..	..	..	..
1229	1	1	..	..	..	..	..	..	..	..	..	..
1230	1	1	..	..	..	..	..	..	..	..	..	..
1231	1	1	..	..	..	..	..	..	..	..	..	..
1231a	1	1	..	..	..	..	..	..	..	..	..	..
1232	1	..	..	1	..	..	..	..	..	..	..	..
1233	1	1	..	..	..	..	..	..	..	..	..	..
1234	1	1	..	..	..	..	..	..	..	..	..	..
1235	..	..	..	..	1	1	..	..	..	..	..	..
1236	1	1	..	..	..	..	..	..	..	..	..	..
1357	1	1	..	..	..	..	..	..	..	..	..	..
1358	1	1	..	..	..	..	..	..	..	..	..	..
1359	1	1	..	..	..	..	..	..	..	..	..	..
1360	..	1	1	..	..	..	..	..	..	..	..	..
1361	1	1	..	..	..	..	..	..	..	..	..	..
1366	1	1	..	..	..	..	..	..	..	..	..	..
1341	..	..	..	..	1	1	..	..	..	..	..	..
	39	39	4	3	7	4	6	10	5	5	3	3

8. November 4, 1919 to August 24, 1921

PERCENT OF ACCURACY WITHIN

	⅓ OF 1		⅓—½		½—1		1—2		2—5		5 AND OVER	
ITEM	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.
1356	1	..	..	1	..	..	..	..	..	..	..	..
1352	1	1	..	..	..	..	..	..	..	..	..	..
1353	1	1	..	..	..	..	..	..	..	..	..	..
1354	..	..	..	..	..	..	..	..	1	..	..	1
1355	1	..	..	..	..	1	..	..	..	..	..	..
1329	1	1	..	..	..	..	..	..	..	..	..	..
1330	..	..	..	..	..	..	1	1	..	..	..	..
1331	..	..	..	..	..	..	..	..	..	1	1	..
1137	..	..	..	..	..	..	..	1	1	..	..	..
1138	..	..	..	..	..	..	1	1	..	..	..	..
1139	..	..	..	..	..	..	..	..	1	1	..	..
1140	..	..	..	..	..	..	..	..	1	..	..	1
1141	1	1	..	..	..	..	..	..	..	..	..	..
1142	..	..	..	..	..	..	..	..	..	..	1	1
1143	..	1	1	..	..	..	..	..	..	..	..	..
1144	1	1	..	..	..	..	..	..	..	..	..	..
1145	1	1	..	..	..	..	..	..	..	..	..	..
1119	1	..	..	..	..	1	..	..	..	..	..	..
1120	1	1	..	..	..	..	..	..	..	..	..	..
1121	..	1	..	..	..	..	1	..	..	..	..	..
1122	1	1	..	..	..	..	..	..	..	..	..	..
1123	..	..	..	..	..	..	..	..	1	1	..	..
1124	..	1	..	..	..	..	1	..	..	..	..	..
1125	1	..	..	..	..	1	..	..	..	..	..	..
1126	1	..	..	..	..	1	..	..	..	..	..	..
1127	1	..	..	..	..	..	..	1	..	..	..	..
1128	..	..	..	..	..	..	1	1	..	..	..	..
1129	..	1	..	..	..	..	1	..	..	..	..	..
1130	1	1	..	..	..	..	..	..	..	..	..	..
1131	..	..	..	..	..	..	..	..	1	..	..	1
1132	1	1	..	..	..	..	..	..	..	..	..	..
1133	..	1	..	..	..	..	1	..	..	..	..	..
1134	..	1	..	..	1	..	..	..	..	..	..	..
1333	..	..	..	..	..	..	..	..	..	..	1	1
1334	..	..	..	1	..	..	1	..	..	..	..	..
1335	1	1	..	..	..	..	..	..	..	..	..	..
1852	1	1	..	..	..	..	..	..	..	..	..	..
1853	1	1	..	..	..	..	..	..	..	..	..	..
	19	19	1	2	1	4	8	5	6	3	3	5

INCREASES DEC.-DEP. RAILS

11. January 23, 1906 to November 20, 1907

1504	..	..	..	..	..	..	1	1	..	..	..	..
1505	..	..	..	..	..	..	..	..	1	..	..	1
1506	..	..	..	..	1	1	..	..	..	..	..	..
1507	..	..	..	..	..	..	..	..	1	1	..	..
1508	..	..	..	..	..	..	..	1	1	..	..	..
528	..	..	..	..	..	1	1	..	..	..	..	..
	0	0	0	0	1	2	2	2	3	1	0	1

13. December 31, 1909 to December 23, 1914

PERCENT OF ACCURACY WITHIN

	⅓ OF 1		⅓—½		½—1		1—2		2—5		5 AND OVER	
ITEM	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.
531	..	..	..	..	1	1	..	..	..	..	..	..
532	..	..	..	..	..	..	1	..	..	1	..	..
533	1	..	..	..	..	1	..	..	..	..	..	..
534	1	1	..	..	..	..	..	..	..	..	..	..
535	..	..	..	..	..	..	..	1	1	..	..	..
538	1	1	..	..	..	..	..	..	..	..	..	..
1510	1	..	..	..	..	1	..	..	..	..	..	..
1511	1	..	..	..	..	1	..	..	..	..	..	..
1512	..	..	..	1	..	..	1	..	..	..	..	..
1406	..	..	..	..	1	1	..	..	..	..	..	..
1407	..	..	..	1	..	..	1	..	..	..	..	..
1408	1	1	..	..	..	..	..	..	..	..	..	..
1409	1	..	..	..	..	1	..	..	..	..	..	..
1410	1	1	..	..	..	..	..	..	..	..	..	..
1411	1	1	..	..	..	..	..	..	..	..	..	..
	9	5	0	2	2	6	3	1	1	1	0	0

15. November 7, 1916 to December 18, 1917

1425	..	1	..	..	..	..	1	..	..	..	..	..
1426	..	..	..	..	..	..	..	..	1	1	..	..
1427	..	..	..	..	1	..	..	..	..	1	..	..
1417	..	..	..	..	..	1	1	..	..	..	..	..
1418	..	..	..	1	1	..	..	..	..	..	..	..
1419	..	..	1	..	..	..	..	1	..	..	..	..
1420	1	..	..	..	..	..	..	1	..	..	..	..
1421	..	..	..	..	1	..	..	1	..	..	..	..
1422	1	..	..	..	..	1	..	..	..	..	..	..
1369	..	..	..	..	..	..	1	1	..	..	..	..
	2	1	1	1	3	2	3	4	1	2	0	0

17. May 28, 1919 to June 20, 1921

1412	1	0	0	0	0	1	0	0	0	0	0	0

DECREASES IMP.-BOOM IND.

1. January 1, 1904 to January 19, 1906

PERCENT OF ACCURACY WITHIN

	⅓ OF 1		⅓—½		½—1		1—2		2—5		5 AND OVER	
ITEM	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.
1601	..	..	..	..	..	..	1	..	..	1	..	..
1602	..	..	..	..	..	1	1	..	..	..	..	..
1603	..	1	..	..	..	..	..	..	1	..	..	..
1613	..	..	..	..	..	..	..	..	..	..	1	1
1614	..	..	..	..	..	..	..	..	..	..	1	1
1615	..	..	..	..	..	..	..	..	1	1	..	..
1616	..	1	..	..	..	..	..	..	1	..	..	..
	0	2	0	0	0	0	2	1	3	2	2	2

3. November 16, 1907 to Nov. 19, 1909

1608	..	1	..	..	1	..	..	..	..	..	..	..
1611	..	..	..	..	..	..	1	..	..	1	..	..
1617	1	..	..	..	..	..	..	1	..	..	..	..
1618	..	..	..	..	..	..	1	..	..	1	..	..
1619	..	1	..	..	..	..	1	..	..	..	..	..
1610	1	..	..	..	..	..	..	..	..	1	..	..
1722	..	1	..	..	1	..	..	..	..	..	..	..
1723	1	..	..	..	..	1	..	..	..	..	..	..
1724	1	..	..	..	..	..	..	1	..	..	..	..
1725	1	1	..	..	..	..	..	..	..	..	..	..
1726	1	1	..	..	..	..	..	..	..	..	..	..
1727	1	1	..	..	..	..	..	..	..	..	..	..
1728	1	1	..	..	..	..	..	..	..	..	..	..
	8	7	0	0	2	1	3	2	0	3	0	0

5. December 24, 1914 to November 21, 1916

1818	..	..	..	..	..	..	1	1	..	..	..	..
1819	..	..	..	..	..	..	1	..	..	1	..	..
1705	1	..	..	1	..	..	..	..	..	..	..	..
1706	1	1	..	..	..	..	..	..	..	..	..	..
1707	..	..	..	..	..	..	1	..	..	..	..	1
1708	1	1	..	..	..	..	..	..	..	..	..	..
1709	..	..	..	..	..	..	..	..	..	..	1	1
1710	..	..	..	..	1	..	..	..	..	1	..	..
1711	1	1	..	..	..	..	..	..	..	..	..	..
1712	1	1	..	..	..	..	..	..	..	..	..	..
1713	..	..	1	1	..	..	..	..	..	..	..	..
1714	1	1	..	..	..	..	..	..	..	..	..	..
1715	1	..	..	..	..	1	..	..	..	..	..	..
	7	5	1	2	1	1	3	1	0	2	1	2

7. December 19, 1917 to November 3, 1919

PERCENT OF ACCURACY WITHIN

	⅓ OF 1		⅓—½		½—1		1—2		2—5		5 AND OVER	
ITEM	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.
1762	1	1	..	..	..	..	..	..	..	..	..	..
1763	..	..	..	..	..	..	1	..	..	1	..	..
1764	1	1	..	..	..	..	..	..	..	..	..	..
1765	..	..	..	..	..	..	..	..	1	1	..	..
1766	1	1	..	..	..	..	..	..	..	..	..	..
1767	1	..	..	..	..	..	..	..	..	1	..	..
1768	..	..	..	..	..	..	..	..	1	..	..	1
1769	..	..	..	..	..	..	..	..	1	..	..	1
1770	..	..	..	..	..	..	1	..	..	1	..	..
	4	3	0	0	0	0	2	0	3	4	0	2

9. August 25, 1921—

1861	..	..	..	..	..	..	..	..	1	..	..	1
1862	..	..	..	..	..	..	..	..	..	..	1	1
1863	..	..	..	..	..	..	..	1	1	..	..	..
1812	..	..	..	..	..	..	..	..	..	..	1	1
1813	..	1	..	..	..	..	1	..	..	..	..	..
1814	..	..	..	..	..	..	..	1	..	..	1	..
1815	..	..	..	..	..	..	..	..	..	..	1	1
	0	1	0	0	0	0	1	2	2	0	4	4

DECREASES IMP.-BOOM RAILS

10. January 1, 1904 to January 22, 1906

1620	..	1	..	..	..	..	1	..	..	..	..	..
1626	1	1	..	..	..	..	..	..	..	..	..	..
1624	1	1	..	..	..	..	..	..	..	..	..	..
	2	3	0	0	0	0	1	0	0	0	0	0

12. November 21, 1907 to December 30, 1909

1625	..	..	..	..	..	..	..	..	1	..	..	1
1627	1	1	..	..	..	..	..	..	..	..	..	..
1628	..	..	..	..	1	1	..	..	..	..	..	..
1629	1	1	..	..	..	..	..	..	..	..	..	..
1630	..	..	..	..	..	..	..	..	1	..	..	1
1631	..	..	..	..	..	..	..	..	1	..	..	1
1622	1	..	..	..	..	..	..	..	..	1	..	..
	3	2	0	0	1	1	0	0	3	1	0	3

14. December 24, 1914 to November 6, 1916

PERCENT OF ACCURACY WITHIN

ITEM	⅓ OF 1		⅓—½		½—1		1—2		2—5		5 AND OVER	
	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.
1838	1	1	..	..	..	..	..	..	..	..	..	..
1839	1	1	..	..	..	..	..	..	..	..	..	..
1840	..	..	..	..	..	..	..	..	..	1	1	..
1841	..	..	..	..	..	..	..	..	1	..	..	1
1842	1	1	..	..	..	..	..	..	..	..	..	..
	3	3	0	0	0	0	0	0	1	1	1	1

16. December 19, 1917 to May 27, 1919

1821	1	..	..	..	..	1	..	..	..	..	..	..
1822	..	..	..	..	..	..	..	..	1	..	..	1
1823	1	1	..	..	..	..	..	..	..	..	..	..
	2	1	0	0	0	1	0	0	1	0	0	1

18. June 21, 1921—

1825	1	..	..	..	..	..	..	..	..	..	..	1
1826	1	1	..	..	..	..	..	..	..	..	..	..
1855	..	1	..	..	1	..	..	..	..	..	..	..
1856	1	1	..	..	..	..	..	..	..	..	..	..
1857	1	1	..	..	..	..	..	..	..	..	..	..
1367	..	.	..	..	..	..	..	..	1	1	..	..
1368	1	..	..	..	..	1	..	..	..	..	..	..
	5	4	0	0	1	1	0	0	1	1	0	1

DECREASES DEC.-DEP. IND.

2. January 20, 1906 to November 15, 1907

1604	1	1	..	..	..	..	..	..	..	..	..	..
1605	..	..	..	..	..	..	..	..	1	1	..	..
1721	..	..	..	..	1	..	..	1	..	..	..	..
	1	1	0	0	1	0	0	1	1	1	0	0

4. November 20, 1909 to December 23, 1914

	PERCENT OF ACCURACY WITHIN											
	⅓ OF 1		⅓—½		½—1		1—2		2—5		5 AND OVER	
ITEM	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.
1701	1	1	..	..	..	..	..	..	..	..	..	..
1702	1	1	..	..	..	..	..	..	..	..	..	..
1703	1	1	..	..	..	..	..	..	..	..	..	..
1704	..	1	..	..	..	..	..	..	1	..	..	..
1716	1	1	..	..	..	..	..	..	..	..	..	..
1717	..	..	..	..	..	..	..	1	1	..	..	..
1718	..	..	..	..	..	..	..	..	1	1	..	..
1719	1	1	..	..	..	..	..	..	..	..	..	..
1720	1	1	..	..	..	..	..	..	..	..	..	..
1729	..	..	..	..	..	..	..	..	..	..	1	1
1609	1	1	..	..	..	..	..	..	..	..	..	..
1612	..	..	..	..	..	..	1	..	..	1	..	..
	7	8	0	0	0	0	1	1	3	2	1	1

6. November 22, 1916 to December 18, 1917

1820	1	0	0	0	0	0	0	1	0	0	0	0

8. November 4, 1919 to August 24, 1921

1771	1	1	..	..	..	..	..	..	..	..	..	..
1772	1	1	..	..	..	..	..	..	..	..	..	..
1773	..	..	..	..	1	..	..	..	..	1	..	..
1774	..	..	..	..	..	..	..	..	1	1	..	..
1775	..	1	..	..	..	..	..	..	1	..	..	..
1776	..	..	..	..	1	..	..	..	..	..	..	1
1777	1	1	..	..	..	..	..	..	..	..	..	..
1778	1	1	..	..	..	..	..	..	..	..	..	..
1779	..	..	..	1	..	..	..	..	1	..	..	..
1780	..	..	..	..	..	..	..	..	1	1	..	..
1781	..	..	..	..	..	..	..	1	1	..	..	..
1782	1	..	..	..	..	..	..	1	..	..	..	..
1783	..	..	..	..	..	..	..	..	1	..	..	1
1784	..	..	..	..	..	..	..	..	1	..	..	1
1785	..	1	..	..	..	..	..	..	1	..	..	..
1786	1	1	..	..	..	..	..	..	..	..	..	..
1787	..	..	..	..	..	..	1	..	..	1	..	..
1788	..	..	..	..	..	..	..	..	1	1	..	..
1789	..	..	..	..	..	..	1	..	..	..	..	1
1790	..	..	..	..	..	..	..	..	1	1	..	..
1791	..	..	..	..	..	..	..	..	1	1	..	..
1792	1	1	..	..	..	..	..	..	..	..	..	..
1793	..	..	..	..	..	..	..	..	1	..	..	1

	PERCENT OF ACCURACY WITHIN											
	⅓ OF 1		⅓—½		½—1		1—2		2—5		5 AND OVER	
ITEM	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.
1794	1	1	..	..	..	..	..	..	..	..	..	..
1795	1	1	..	..	..	..	..	..	..	..	..	..
1796	..	..	..	..	..	..	1	1	..	..	..	..
1797	..	..	..	..	..	..	..	..	1	..	..	1
1798	1	1	..	..	..	..	..	..	..	..	..	..
1799	1	1	..	..	..	..	..	..	..	..	..	..
1800	..	1	..	..	..	..	..	..	1	..	..	..
1801	1	..	..	..	..	..	..	..	..	1	..	..
1801a	..	..	..	..	1	..	..	..	..	1	..	..
1802	..	..	..	..	..	..	..	..	1	..	..	1
1803	1	..	..	..	..	1	..	..	..	..	..	..
1804	..	..	..	..	..	..	..	..	1	1	..	..
1805	1	1	..	..	..	..	..	..	..	..	..	..
1806	..	..	..	..	..	..	..	..	1	1	..	..
1807	..	..	..	..	..	..	..	..	..	..	1	1
1808	..	..	..	..	..	..	..	..	1	..	..	1
1809	..	..	..	..	..	..	..	..	..	..	1	1
1810	..	1	..	..	..	..	..	..	1	..	..	..
1811	..	1	1	..	..	..	..	..	..	..	..	..
1816	1	1	..	..	..	..	..	..	..	..	..	..
1817	1	1	..	..	..	..	..	..	..	..	..	..
1730	..	..	..	..	..	..	..	..	..	1	1	..
1731	1	..	..	..	..	..	..	..	..	..	..	1
1732	..	..	..	..	..	..	..	..	..	..	1	1
1733	..	..	..	..	..	1	..	..	1	..	..	..
1734	..	..	..	..	..	..	..	..	..	..	1	1
1735	..	..	..	..	..	..	..	..	1	1	..	..
1737	..	1	..	..	..	..	1	..	..	..	..	..
1738	..	..	..	..	..	..	..	..	1	..	..	1
1739	1	1	..	..	..	..	..	..	..	..	..	..
1740	..	..	..	..	..	..	..	..	1	..	..	1
1741	..	..	..	..	..	..	1	..	..	1	..	..
1742	..	..	..	..	..	1	1	..	..	..	..	..
1743	..	1	..	..	..	..	..	..	1	..	..	..
1744	1	1	..	..	..	..	..	..	..	..	..	..
1745	..	1	..	..	..	..	..	..	1	..	..	..
1746	1	1	..	..	..	..	..	..	..	..	..	..
1747	..	..	..	..	..	..	1	..	..	1	..	..
1748	..	..	..	..	..	..	..	..	..	..	1	1
1749	1	..	..	..	..	..	..	..	..	1	..	..
1750	1	1	..	..	..	..	..	..	..	..	..	..
1751	..	..	..	..	..	..	..	..	1	..	..	1
1752	..	..	..	..	..	..	1	..	..	1	..	..
1753	..	..	..	..	..	1	1	..	..	..	..	..
1754	..	1	..	..	..	..	..	..	1	..	..	..
1755	..	..	..	..	..	..	1	..	..	..	..	1
1756	..	..	..	..	..	..	1	..	..	1	..	..

PERCENT OF ACCURACY WITHIN

	⅓ OF 1		⅓—½		½—1		1—2		2—5		5 AND OVER	
ITEM	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.
1757	1	..	..	..	..	1	..	..	..	..	..	..
1758	..	..	..	..	..	..	..	..	..	..	1	1
1759	..	..	..	..	..	..	..	..	..	..	1	1
1760	1	1	..	..	..	..	..	..	..	..	..	..
1761	..	..	..	..	..	..	..	..	..	..	1	1
1859	..	..	..	..	..	..	..	..	..	1	1	..
1860	1	1	..	..	..	..	..	..	..	..	..	..
1864	1	1	..	..	..	..	..	..	..	..	..	..
1865	..	..	..	..	..	..	..	..	..	..	1	1
1866	..	..	..	..	..	..	..	..	..	..	1	1
1867	..	..	..	..	..	..	..	..	1	1	..	..
1868	..	..	..	..	..	..	..	..	1	1	..	..
1869	..	1	1	..	..	..	..	..	..	..	..	..
1870	1	..	..	..	..	..	..	1	..	..	..	..
1871	..	..	..	..	1	..	..	..	..	1	..	..
	27	30	2	1	4	5	11	4	29	22	12	25

DECREASES DEC.-DEP. RAILS

11. January 23, 1906 to November 20, 1907

1621	0	0	1	0	0	0	0	1	0	0	0	0

13. December 31, 1909 to December 23, 1914

1827	..	..	1	..	..	..	..	1	..	..	..	..
1828	..	..	..	..	..	1	..	..	1	..	..	..
1829	..	..	..	..	..	..	..	..	..	..	1	1
1830	..	..	..	..	..	..	1	..	..	1	..	..
1831	..	..	..	..	..	..	..	..	..	..	1	1
1832	..	..	..	..	..	..	..	..	1	..	..	1
1833	..	..	..	..	..	..	1	1	..	..	..	..
1834	..	..	..	..	..	..	..	..	1	1	..	..
1835	1	..	..	..	..	..	..	..	..	1	..	..
1836	..	1	1	..	..	..	..	..	..	..	..	..
1837	1	1	..	..	..	..	..	..	..	..	..	..
1843	..	..	1	..	..	1	..	..	..	..	..	..
1844	..	..	..	..	..	..	..	..	..	..	1	1
1845	..	..	..	..	1	..	..	1	..	..	..	..
1846	..	1	..	..	..	..	1	..	..	..	..	..
1847	1	1	..	..	..	..	..	..	..	..	..	..
1848	..	..	1	1	..	..	..	..	..	..	..	..
1622	..	..	..	..	..	..	1	..	..	..	..	1
	3	4	4	1	1	2	4	3	3	3	3	5

17. May 28, 1919 to June 20, 1921

PERCENT OF ACCURACY WITHIN

ITEM	⅓ OF 1		⅓—½		½—1		1—2		2—5		5 AND OVER	
	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.
1849	..	..	..	1	..	..	1	..	..	1	..	..
1850	..	1	1	..	..	..	..	..	..	..	..	..
1851	..	..	..	..	..	..	1	..	..	1	..	..
1854	..	..	..	..	..	..	..	..	1	..	..	1
1858	..	..	..	..	..	..	..	..	1	1	..	..
1824	1	1	..	..	..	..	..	..	..	..	..	..
	1	2	1	0	0	0	2	0	2	3	0	1

Appendix C

STOCKS DECLARING "RIGHTS" AND STOCK DIVIDENDS

(Listed on New York Stock Exchange, unless indicated otherwise.)

Rails

A

Atchison, T., & St. Fe
Atlantic Coast Line

B

Boston & Maine (Bo.)

C

Chic., Milw., & St. P.
Chic. & Northwestern
Cleveland, C., C. & St. L.

Industrials

A

Amer. Brake Shoe & Fdy.
Amer. Cigar (Curb)
Amer. Cotton Oil
Amer. Gas & Elec.
Amer. Rad. (Chic.)
Amer. Steel Foundries
Amer. T. & T.
Amer. Tobacco
Atlantic Ref. (Curb)
Atlas Powder (Curb)

B

C

Continental Oil (Curb)
Col. Graphaphone
Cramp Ship (Phila.)
Crucible Steel
Cumberland Pipe Line (Curb)

Rails	*Industrials*
D	D
D., L., & W.	Detroit Edison DuPont de Nemours
E	E
	Endicott Johnson
F	F
G	G
Great Northern	General Chemical General Electric General Motors Gillette Safety Razor (Curb) Gray & Davis (Bo.)
H	H
	G. W. Helme (Curb)
I	I
Illinois Central	International Harvester International Motor Truck
J	J
K	K
	Keystone T. & Rubber
L	L
Louisville & Nashville	Lee Tire & Rubber Leow's Theaters (Bo.) Libby, McNeill, & Libby (Chic.) Lorillard, P.
M	M
	Manhattan Shirt May Dept. Stores Mergenthaler Lino. (Bo.) Mexican Pet. Middle States Oil
N	N
New York Central Norfolk & Western Northern Central (Balt.) Northern Pacific	National Biscuit National Carbon (Chic.) National Lead North American Co.
O	O
	Ohio Oil (Curb) Otis Elevator Owens Bottle

Rails	*Industrials*
P	P
Pennsylvania	Pac. Gas & Elec. Packard Motor Pan Amer. Pet. Pittsburgh Plate Glass (Pitts.) Prairie Oil & Gas (Curb) Prairie Pipe Line (Curb) Pullman Pure Oil
Q	Q
R	R
	Reynolds, R. J., Tobacco (Curb)
S	S
Seaboard Air Line (Balt.) Southern Pacific	Sears Roebuck (Chic.) Solar Refining (Curb) South Penn Oil (Curb) Southern Porto Rico Sugar St. Joseph Lead Standard Milling Standard Oil of Kansas (Curb) Standard Oil of Neb. (Curb) Standard Oil of N. J. (Curb) Standard Oil of N. Y. (Curb) Standard Oil of Ohio (Curb) Standard Screw (Curb) Stromberg Carb. Studebaker Stutz Motor
T	T
	Tenn. Coal & Iron Tobacco Prod. Exp. (Curb)
U	U
Union Pac.	United Gas Imp. (Phila.) Union Oil of Cal. United Cigar Stores United Fruit (Bo.) United Retail Stores United Shoe Mach. (Bo.) U. S. Rubber
V	V
	Vacuum Oil

W	W Westinghouse Elec. Weyman Bruton (Curb) Wilson & Co.
X	X
Y	Y
Z	Z

Appendix D

"RIGHTS" AND STOCK DIVIDENDS

Original items: Classified according to degree of discounting effectiveness

IMP.-BOOM IND.

1. January 1, 1904 to January 1, 1906

PERCENT OF ACCURACY WITHIN

	⅓ OF 1		⅓—½		½—1		1—2		2—5		5 AND OVER	
ITEM	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.
3	1	1	..	..	..	..	..	..	..	..	..	..
6	..	1	1	..	..	..	..	..	..	..	..	..
7	..	1	..	..	1	..	..	..	..	..	..	..
	1	3	1	0	1	0	0	0	0	0	0	0

3. November 15, 1907 to November 19, 1909

18	1	1	..	..	..	..	..	..	..	..	..	..
21	1	..	..	1	..	..	..	..	..	..	..	..
23	1	1	..	..	..	..	..	..	..	..	..	..
	3	2	0	1	0	0	0	0	0	0	0	0

5. December 24, 1914 to November 21, 1916

98	1	1	..	..	..	..	..	..			..	..
99	1	1	..	..	..	..	..	..			..	..
100	..	1	..	..	..	..	..	..	1		..	..
101	1	1	..	..	..	..	..	..			..	..
109	..	..	1	..	..	1	..	..			..	..
110	1	1	..	..	..	..	..	..			..	..
	4	5	1	0	0	1	0	0		0	0	0

7. December 19, 1917 to November 30, 1919

	PERCENT OF ACCURACY WITHIN											
	⅓ OF 1		⅓—½		½—1		1—2		2—5		5 AND OVER	
ITEM	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.
41	..	..	..	..	..	..	..	..	1	1	..	..
44	1	1	..	..	..	..	..	..	..	..	..	..
47	1	..	..	..	..	..	..	1	..	..	..	..
49	1	1	..	..	..	..	..	..	..	..	..	..
50	..	..	..	..	..	1	1	..	..	..	..	..
51	..	..	..	..	..	..	..	..	1	1	..	..
	3	2	0	0	0	1	1	1	2	2	0	0

9. August 25, 1921—

150	1	1	..	..	..	..	..	..	..	..	..	..
154	1	..	..	..	..	..	..	..	..	..	..	1
155	..	1	..	..	..	..	..	..	1	..	..	..
156	1	1	..	..	..	..	..	..	..	..	..	..
157	1	1	..	..	..	..	..	..	..	..	..	..
162	1	1	..	..	..	..	..	..	..	..	..	..
163	..	..	..	..	..	..	..	..	1	..	..	1
166	1	1	..	..	..	..	..	..	..	..	..	..
168	1	..	..	..	..	1	..	..	..	..	..	..
169	1	1	..	..	..	..	..	..	..	..	..	..
170	..	..	..	..	1	..	..	..	..	1	..	..
171	..	..	..	..	..	..	..	..	1	1	..	..
173	..	..	..	..	..	..	1	..	..	1	..	..
174	1	..	..	..	..	..	..	1	..	..	..	..
175	..	..	..	..	..	..	..	..	1	..	..	1
176	..	..	..	..	..	..	..	..	1	..	..	1
177	..	1	..	..	..	..	1	..	..	..	..	..
180	1	1	..	..	..	..	..	..	..	..	..	..
181	1	1	..	..	..	..	..	..	..	..	..	..
185	..	..	..	..	..	..	..	..	1	..	..	1
187	..	1	..	..	1	..	..	..	..	..	..	..
190	1	..	..	..	..	..	..	1	..	..	..	..
191	..	..	..	..	..	..	..	..	1	..	..	1
196	..	1	..	..	..	..	1	..	..	..	..	..
197	..	..	..	..	..	..	..	..	..	..	1	1
198	1	1	..	..	..	..	..	..	..	..	..	..
199	..	..	..	..	..	..	..	..	1	..	..	1
201	..	..	..	..	..	..	1	..	..	1	..	..
204	1	1	..	..	..	..	..	..	..	..	..	..
206	1	1	..	..	..	..	..	..	..	..	..	..
208	..	..	..	..	..	..	..	..	1	1	..	..
210	1	1	..	..	..	..	..	..	..	..	..	..
212	1	1	..	..	..	..	..	..	..	..	..	..

PERCENT OF ACCURACY WITHIN

	⅓ OF 1		⅓—½		½—1		1—2		2—5		5 AND OVER	
ITEM	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.
213	1	1	..	..	..	..	..	..	..	..	..	..
214	1	1	..	..	..	..	..	..	..	..	..	..
216	..	..	..	..	..	..	1	1	..	..	..	..
218	..	1	..	..	1	..	..	..	..	..	..	..
	19	20	0	0	3	1	5	3	9	5	1	8

IMP.-BOOM RAILS

10. January 1, 1904 to January 19, 1906

1	..	..	..	1	..	..	..	..	1	..	..	..
2	1	1	..	..	..	..	..	..	..	..	..	..
4	..	..	..	..	..	..	..	..	1	1	..	..
5	1	1	..	..	..	..	..	..	..	..	..	..
	2	2	0	1	0	0	0	0	2	1	0	0

12. November 19, 1907 to December 31, 1909

22	..	..	..	..	..	1	1	..	..	..	..	..
24	1	..	..	..	..	1	..	..	..	..	..	..
25	1	1	..	..	..	..	..	..	..	..	..	..
26	1	1	..	..	..	..	..	..	..	..	..	..
	3	2	0	0	0	2	1	0	0	0	0	0

2. January 20, 1906 to November 15, 1907

DEC.-DEP. IND.

12	1	0	0	0	0	1	0	0	0	0	0	0

4. November 20, 1909 to December 23, 1914

30	..	..	..	..	1	1	..	..	..	..	..	..
31	1	1	..	..	..	..	..	..	..	..	..	..
32	1	1	..	..	..	..	..	..	..	..	..	..
36	..	1	..	..	..	..	..	..	1	..	..	..
108	..	..	..	..	..	..	..	..	1	1	..	..
111	1	1	..	..	..	..	..	..	..	..	..	..
113	1	1	..	..	..	..	..	..	..	..	..	..
114	..	..	..	..	..	..	..	..	..	..	1	1
	4	5	0	0	1	1	0	0	2	1	1	1

6. November 22, 1916 to December 18, 1917

PERCENT OF ACCURACY WITHIN

	⅓ OF 1		⅓—½		½—1		1—2		2—5		5 AND OVER	
ITEM	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.
102	..	..	..	..	1	..	..	..	..	..	..	1
103	..	..	..	..	..	..	..	..	1	1	..	..
105	1	1	..	..	..	..	..	..	..	..	..	..
106	1	1	..	..	..	..	..	..	..	..	..	..
107	1	1	..	..	..	..	..	..	..	..	..	..
	3	3	0	0	1	0	0	0	1	1	0	1

8. November 4, 1919 to August 24, 1921

117	..	..	..	..	..	..	..	..	..	..	1	1
118	1	1	..	..	..	..	..	..	..	..	..	..
119	..	1	..	..	1	..	..	..	..	..	..	..
121	1	1	..	..	..	..	..	..	..	..	..	..
123	1	..	..	..	..	..	..	..	..	1	..	..
124	1	1	..	..	..	..	..	..	..	..	..	..
125	1	1	..	..	..	..	..	..	..	..	..	..
127	1	1	..	..	..	..	..	..	..	..	..	..
128	..	..	..	..	..	..	1	..	..	1	..	..
131	1	..	..	..	..	..	..	..	..	1	..	..
132	..	1	..	..	..	..	..	..	1	..	..	..
136	1	1	..	..	..	..	..	..	..	..	..	..
138	..	1	..	..	1	..	..	..	..	..	..	..
143	..	..	..	..	..	..	..	1	1	..	..	..
144	..	..	..	..	..	..	..	..	..	..	1	1
145	1	1	..	..	..	..	..	..	..	..	..	..
147	..	..	..	..	..	..	1	1	..	..	..	..
52	..	..	..	..	..	..	..	..	..	..	1	1
53	..	1	..	..	..	..	1	..	..	..	..	..
54	1	1	..	..	..	..	..	..	..	..	..	..
55	1	1	..	..	..	..	..	..	..	..	..	..
57	1	1	..	..	..	..	..	..	..	..	..	..
58	1	1	..	..	..	..	..	..	..	..	..	..
59	..	..	..	..	..	..	..	..	1	1	..	..
64	..	..	..	..	..	..	..	..	..	1	1	..
67	..	..	..	..	..	1	..	..	1	..	..	..
71	1	1	..	..	..	..	..	..	..	..	..	..
72	..	..	..	..	1	..	..	..	..	1	..	..
73	..	..	..	..	..	..	..	..	1	1	..	..
74	..	..	..	..	..	..	..	..	1	1	..	..
75	..	..	..	..	..	..	1	1	..	..	..	..
76	1	1	..	..	..	..	..	..	..	..	..	..
78	..	..	..	..	..	..	1	1	..	..	..	..
80	..	..	..	..	..	..	..	..	1	..	..	1

PERCENT OF ACCURACY WITHIN

	⅓ OF 1		⅓—½		½—1		1—2		2—5		5 AND OVER	
ITEM	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.	D.A.	B.D.
81	..	1	..	..	..	..	..	..	1	..	..	..
83	..	1	..	..	..	..	1	..	..	..	..	..
84	..	1	..	..	..	..	1	..	..	..	..	..
86	..	..	..	..	..	..	1	..	..	1	..	..
87	1	..	..	..	..	..	..	1	..	..	..	..
88	..	..	..	..	..	..	..	..	1	1	..	..
89	..	..	..	..	..	..	..	..	1	1	..	..
90	..	1	..	..	1	..	..	..	..	..	..	..
91	1	1	..	..	..	..	..	..	..	..	..	..
92	1	1	..	..	..	..	..	..	..	..	..	..
93	1	..	..	..	..	..	..	1	..	..	..	..
94	1	1	..	..	..	..	..	..	..	..	..	..
	20	24	0	0	4	1	8	6	10	11	4	4

DEC.-DEP. RAILS

11. January 23, 1906 to November 20, 1907

8	..	..	..	..	1	..	..	1	..	..	..	..
9	1	1	..	..	..	..	..	..	..	..	..	..
10	..	..	..	..	..	..	1	1	..	..	..	..
11	..	..	..	..	..	..	1	1	..	..	..	..
13	1	1	..	..	..	..	..	..	..	..	..	..
14	1	1	..	..	..	..	..	..	..	..	..	..
15	1	1	..	..	..	..	..	..	..	..	..	..
16	1	1	..	..	..	..	..	..	..	..	..	..
17	1	1	..	..	..	..	..	..	..	..	..	..
19	..	..	..	..	..	..	1	..	..	1	..	..
20	1	1	..	..	..	..	..	..	..	..	..	..
	7	7	0	0	1	0	3	3	0	1	0	0

13. December 31, 1909 to December 23, 1914

28	1	1	..	..	..	..	..	..	..	..	..	..
33	..	..	..	..	..	..	..	..	..	..	1	1
35	1	1	..	..	..	..	..	..	..	..	..	..
39	1	1	..	..	..	..	..	..	..	..	..	..
40	1	1	..	..	..	..	..	..	..	..	..	..
	4	4	0	0	0	0	0	0	0	0	1	1

15. November 7, 1916 to December 18, 1917

104	1	0	0	0	0	0	0	1	0	0	0	0

BIBLIOGRAPHY

A. *Primary:*

1. *Commercial and Financial Chronicle,* weekly issues, 1904–1922, incl. New York.

2. Philadelphia News Bureau. *Daily News Bulletins,* 1904–1922, incl. Philadelphia.

3. *Wall Street Journal,* daily, 1904–1922, incl. New York.

B. *Secondary:*

1. Brookmire, James H. "Methods of Business Forecasting Based on Fundamental Statistics." *American Economic Review,* March, 1913, Vol. II.

2. Conant, Charles A. "Wall Street and the Country." G. P. Putnam. New York, 1904.

3. Dewing, Arthur Stone. "The Financial Policy of Corporations." Vol. IV. Ronald Press. New York, 1921.

4. Hamilton, William P. "The Stock Market Barometer." Tables of Dow-Jones Average Prices in Appendix. Harpers. New York, 1922.

5. Huebner, S. S. "The Stock Market." D. Appleton & Co. New York, 1922.

6. Jordan, David F. "Business Forecasting." Prentice-Hall, Inc. New York, 1921.

7. Meeker, J. Edward. "The Work of the Stock Exchange." Ronald Press. New York, 1922.

8. Nelson, S. A. "The A, B, C, of Stock Speculation." S. A. Nelson. New York.

PRINTED BY
WESTBROOK PUBLISHING
PHILADELPHIA, PA.